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CONTENTS

	Page
Characteristics of the General Circulation Over the Northern Hemisphere During the Abnormal Winter 1946–47 (11 figs.), Jerome Namias	145
METEOROLOGICAL AND CLIMATOLOGICAL DATA:	
Aerological Observations	153
River Stages and Floods	158
Climatological Data	159
SOLAR RADIATION AND SUNSPOT DATA:	
Solar Radiation Observations	166
Positions, Areas, and Counts of Sunspots	168
Provisional Relative Sunspot Numbers for August 1947	171
CHARTS I–XI. (Chart VII, Snowfall, omitted until November.)	

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CHARACTERISTICS OF THE GENERAL CIRCULATION OVER THE NORTHERN HEMISPHERE DURING THE ABNORMAL WINTER 1946–47

By JEROME NAMIAS

[Extended Forecast Section, U. S. Weather Bureau, Washington, D. C.]

The Winter of 1946–47 was notable for its large variation from normal in many parts of the world. Especially was this true in Great Britain where the climate became continental rather than the normal maritime. In eastern Canada unusually mild maritime air reigned where normally the Winter has a continental regime. Northwestern Canada and Alaska experienced abnormal frigidity, while in the United States extensive mildness prevailed in December and January, giving way to severe winter cold in February. The circulation of air masses which accompanied these abnormal weather regimes made it necessary for aviators to reckon with extraordinary wind velocities on air routes over the oceans. Over the Atlantic, east-to-west crossings were made in fast time in February and March north of 50° N. latitude; in latitudes farther south, eastward crossings were rapid. These weather anomalies and many others which highlighted the winter of 1946–47 seemed to overthrow the classical model of the general circulation in the Northern Hemisphere. It is the purpose of this report to describe and investigate the nature of the anomalies and to offer a possible physical explanation of their evolution.

DESCRIPTION OF CIRCULATION AND ASSOCIATED WEATHER ANOMALIES

The monthly mean charts of sea level pressure and departure from normal for January and February are shown in Figures 1 and 2. To a considerable degree December (not reproduced) resembled January, while March (not reproduced) was similar to February. Insets in these figures show the complete Northern Hemisphere pressure profiles and the corresponding normal profiles. In the chart for February the net geostrophic zonal wind components for the hemisphere from 20° to 90° N. lat. are also shown (see inset).

The striking features of the January chart are:

1. The westward intrusion of the Siberian High into Europe (+17 mb. anomaly over Scandinavia).
2. The absence of the normal low pressure trough and storm track from the Icelandic Low northeastward, and, instead, the trough from the intense Icelandic Low through Davis Strait into the Polar Basin.
3. The imprisonment of the North American Polar Continental anticyclone in northwest Canada and the resultant domination of the United States by Pacific air masses and the Great Basin anticyclone.
4. The weakness of the western cell of the Aleutian Low.

On the corresponding chart for February (Figure 2) the following features, amazingly different from January, can be noted:

1. The tremendous extent of the Arctic High, resulting in a vast excess pressure anomaly over areas north of latitude 55° N.
2. The southward displacement of the subpolar lows, especially in the Atlantic.

The pressure profiles focus attention on the large differences in the mass of air between January and February. In February, for example, it will be observed that the belt of polar east winds normally found north of 62° N. latitude extended to 45° N. latitude (see wind profile inset, Figure 2). Correspondingly, the zonal westerlies of temperate latitudes and the subtropical easterlies were displaced far south of their normal positions.

The monthly mean 700-mb. charts for January and February are shown in Figures 3 and 4, with observed and normal height profiles inset. Further discussion of these charts will be given later, but the excess anomaly of mass at higher latitudes in February and the associated reversal of the normal upper-level polar westerlies to easterlies should be noted.

The association of the foregoing charts with the abnormal weather regimes pointed out earlier in this report now becomes clear. A simplified picture of the January and February temperature anomaly of the lower troposphere (sea level to 700 mb.) is presented in Figures 5 and 6. For the area from 0° westward to 180° W. longitude, from which fairly reliable data are available, Figures 5 and 6 are based on computed thickness anomalies for the layer from 1,000 mb. to 700 mb. For the remainder of the hemisphere they are based upon a less objective evaluation of the temperature anomaly of the lower troposphere as it would presumably be influenced by the circulation patterns and their anomalies. True charts of temperature anomalies for the entire hemisphere would be difficult, if not impossible, to prepare. For the general purposes of this report, Figures 5 and 6 are adequate.

The January flow pattern at 700 mb. (Figure 3) shows two areas of strong confluence [1] where cold Arctic air was advected beside warm tropical air. In the extreme eastern Pacific, Alaskan air with temperatures originally averaging −25° C. to −30° C. was forced to converge in the zonal westerlies with warm Pacific air from east of the Hawaiian Islands, with temperature originally averaging +5° C. The confluence of these radically different air streams, effected by the trough's position in the Gulf of Alaska north of the eastern Pacific ridge, concentrated the energy of the westerlies in a strong, narrow jet-stream whose momentum carried on downstream for some distance. This jet-stream was revitalized in eastern North America where cold air from northwest Canada flowed beside warm air originally from the States bordering on the Gulf of Mexico. The momentum of the strong westerlies continued on through the Atlantic. In view of these fast westerlies over North America, it is not surprising that the

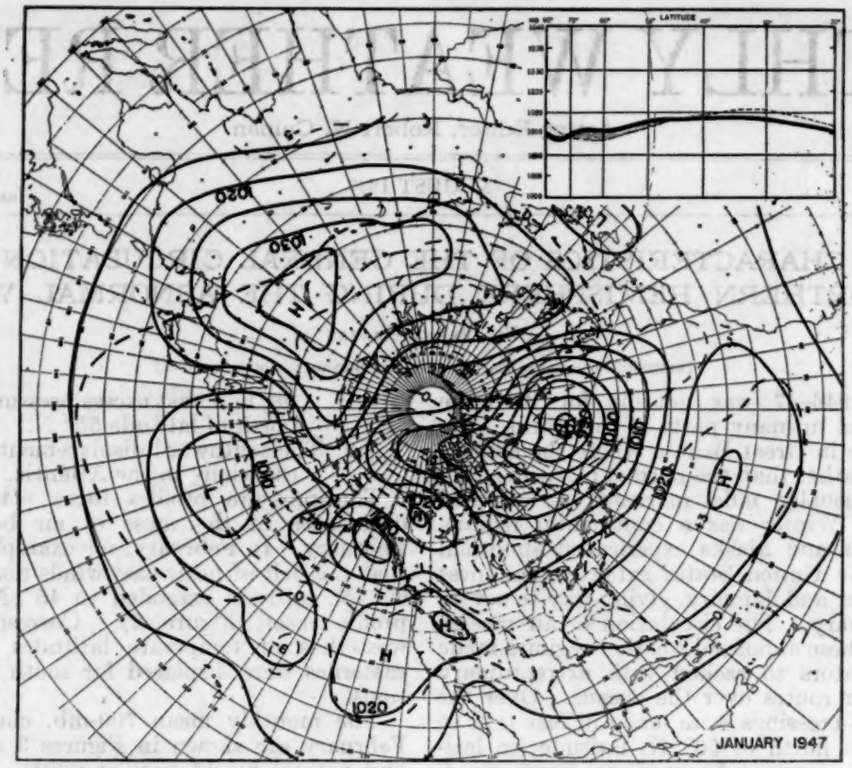

FIGURE 1.—Mean sea level chart showing isobars (solid lines) and pressure departures from normal (broken lines) for January 1947. (Inset shows observed pressure profile—solid line—and normal profile for that month, with excess anomalies shaded.)

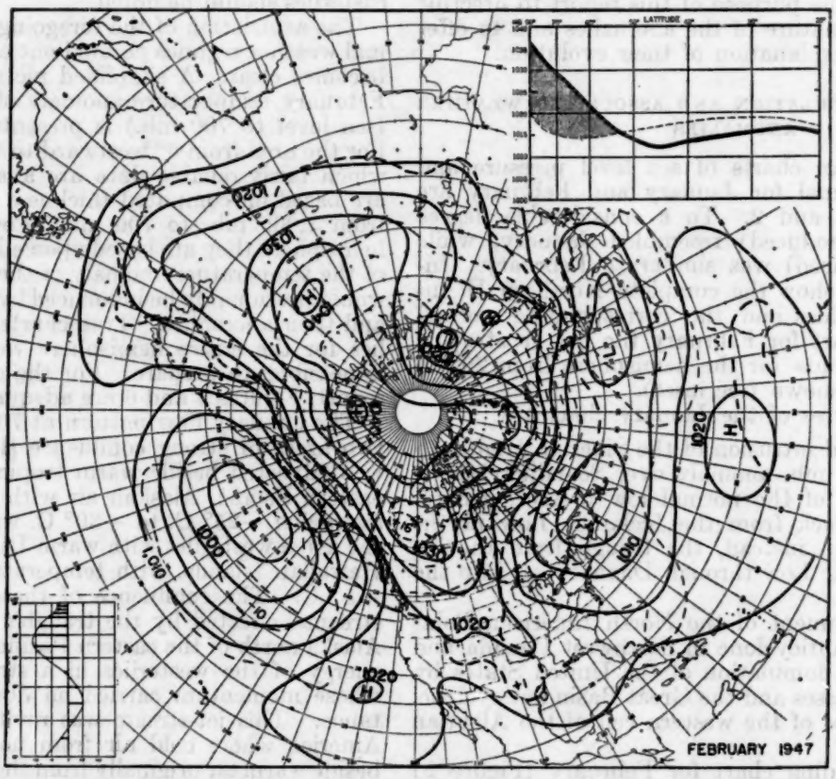

FIGURE 2.—Mean sea level chart showing isobars (solid lines) and pressure departures from normal (broken lines) for February 1947. (Inset on upper right shows observed pressure profile—solid line—and normal profile for that month, with excess anomalies shaded. Inset in lower left shows net geostrophic zonal wind components from 20°–90° N. lat.)

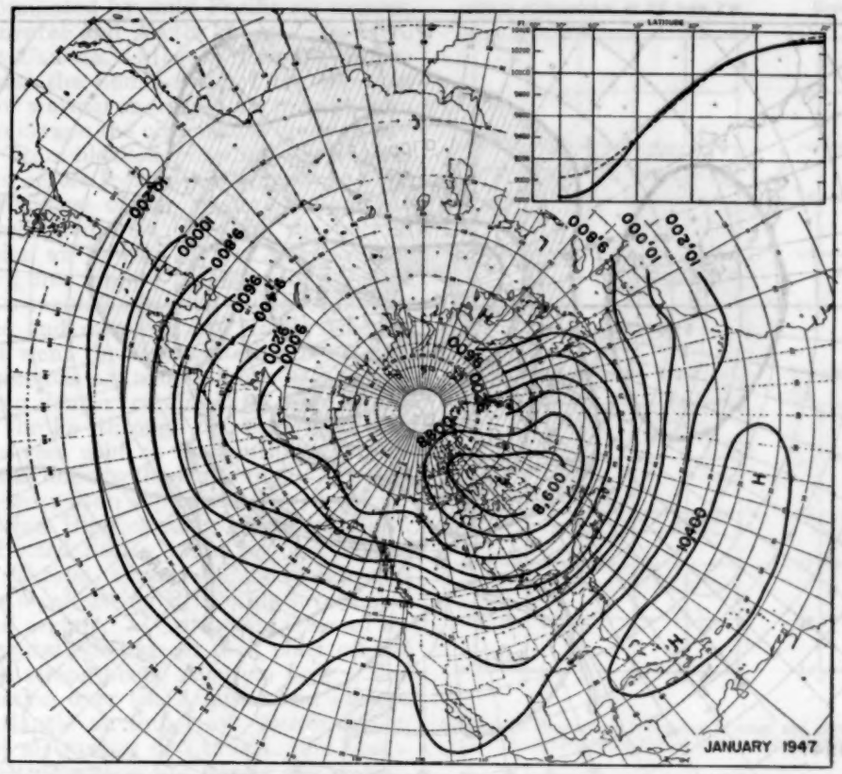

FIGURE 3.—Mean 700-mb. height contours for January 1947. (Inset shows observed height profile—solid line—and normal profile for that month, with excess anomalies shaded.)

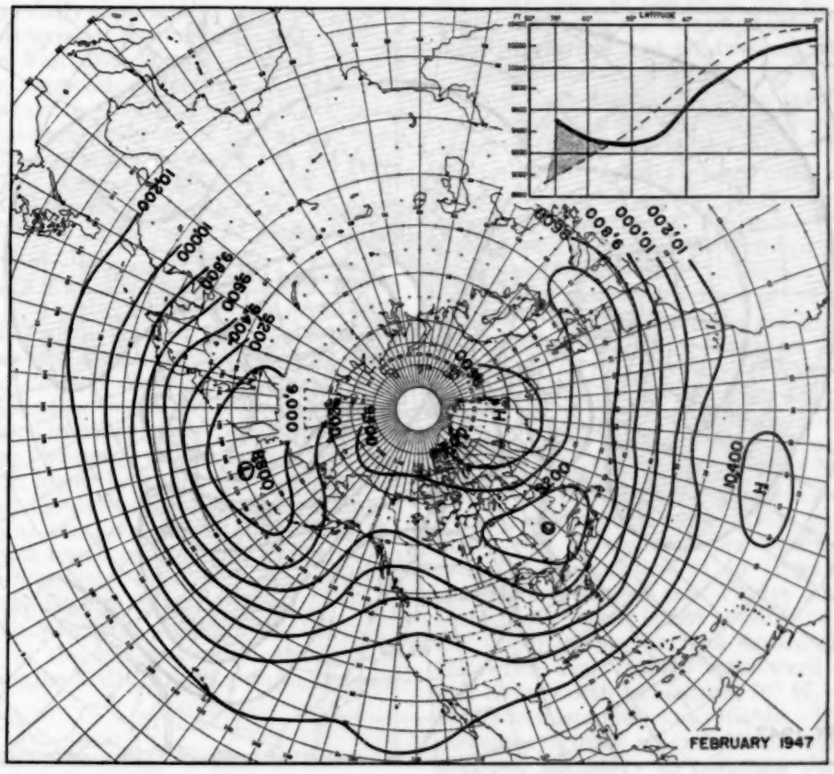

FIGURE 4.—Mean 700-mb. height contours for February 1947. (Inset shows observed height profile—solid line—and normal profile for that month, with excess anomalies shaded.)

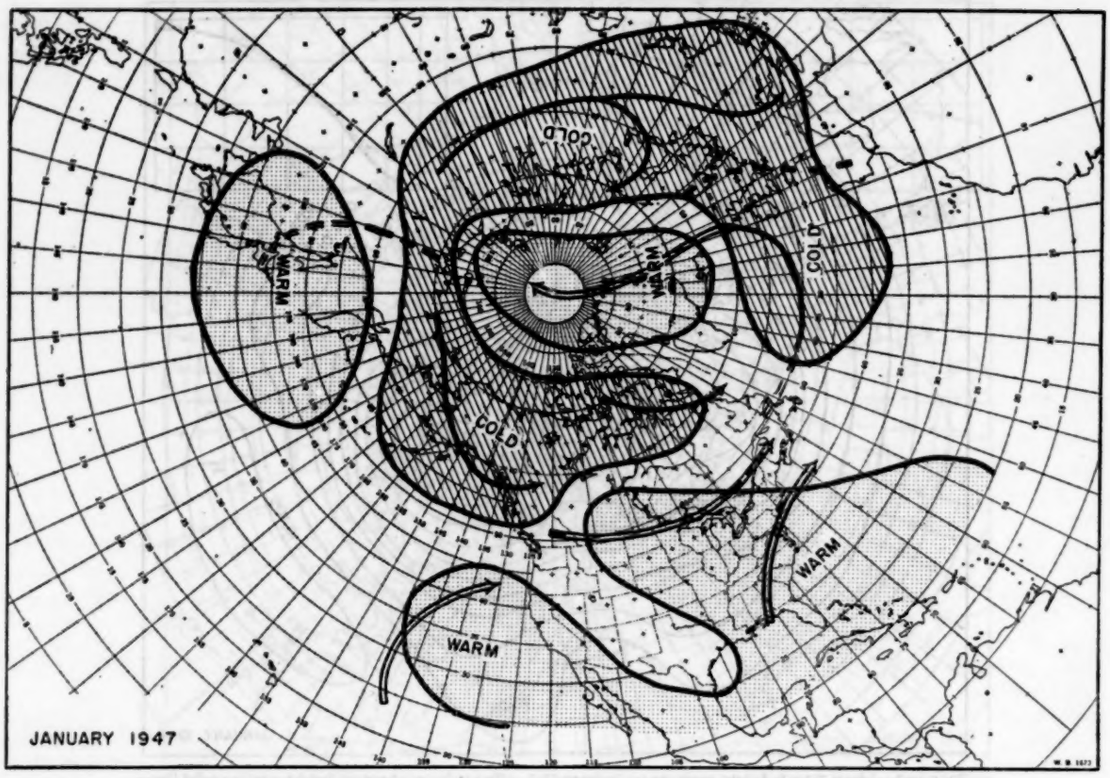

FIGURE 5.—General indicated temperature anomalies of the lower troposphere, 1,000 mb., to 700 mb., during January 1947. (Arrows indicate flow.)

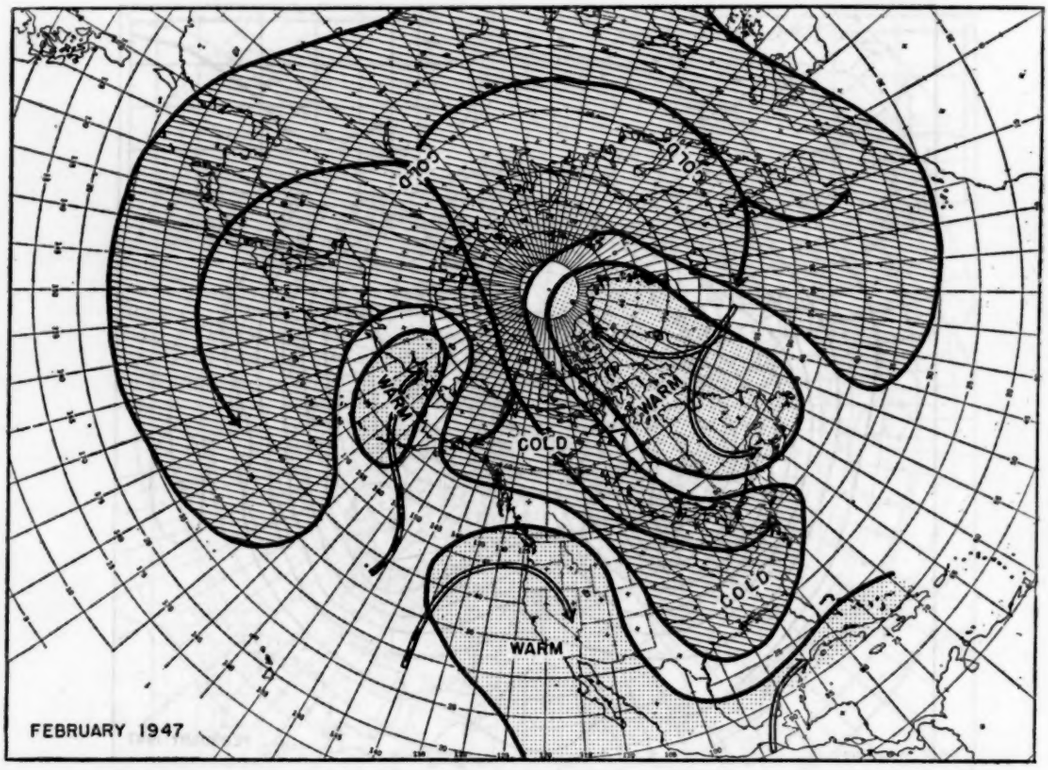

FIGURE 6.—General indicated temperature anomalies of the lower troposphere, 1,000 mb., to 700 mb., during February 1947. (Arrows indicate flow.)

United States was dominated by mild Pacific air masses, and the Polar Continental and Arctic anticyclones were trapped in northwest Canada. Most of Europe, on the other hand, was under the domination of the Siberian High, with the flow of warmer maritime air masses from the Atlantic unable to invade the continental areas to any appreciable extent. Thus blocked, maritime air masses were forced northward across Iceland, Greenland, and the Polar Basin. The weakness of the western cell of the Aleutian Low was associated with less than the normal amount of cold Siberian air flowing off the Asiatic coast.

In February (see Figures 2 and 4) a radically different circulation and weather regime took over. The confluence in the eastern Pacific and over eastern North America vanished, and with it went the fast westerlies over mid-latitudes. Cold continental air masses from Alaska and northwest Canada, no longer confined by the strong westerly circulation, broke through to eastern North America, producing severe cold as far south as Florida where much damage was done to the fruit crop. The cold Canadian air masses were soon replenished by new outbreaks from the Siberian High crossing the Polar Basin en route to eastern United States. The retrogression of the Siberian air into Europe, already begun in January, proceeded farther westward, giving Britain its severe cold and snowy continental regime. At the same time an increased flow of continental Siberian air took place off the Asiatic coast to feed a strengthened Aleutian Low. The strong easterly circulation over the Atlantic and eastern Canada made the Atlantic an important source region where the continental air masses of Eurasia were transformed into Polar Maritime masses and flowed into eastern Canada, producing a warm, wet condition there. In fact, during February warm fronts moving westward and southward across Labrador and the Great Lakes region were common features of the daily map analyses.

Some of the characteristic features of the general circulation during the Fall and Winter of 1946–47 are effectively shown by complete Northern Hemisphere indices of mass and circulation in Figure 7. In graph (a) the position of the subpolar minimum in the pressure profile (the latitude of separation between the sea level zonal westerlies and the polar easterlies) is plotted for overlapping monthly periods from October through March; the normal latitude of the zone of separation is indicated by the broken line. The sharp transition, chiefly between January and February, and the persistence of the abnormal southerly position of the separation through March is clearly shown. In 7 (b) the total anomaly of the mass of air over the Northern Hemisphere (from 20° N. latitude to the Pole) is shown. It appears that fluctuations in this quantity were not especially large (compared to fluctuations in other years), since the excess at high latitudes during February was in large part compensated by a deficit in lower latitudes (see profile inset of Figure 2). In 7 (c) the latitude of greatest strength of the zonal westerlies at sea level is compared with the normal. 7 (d) shows the speed of the zonal westerlies in the zone of maximum strength—i. e., at latitudes given in 7 (c). In spite of the decline in strength of the westerlies in temperate latitudes from January to February there was an *increase* in the net west-wind strength as the westerlies shifted southward. A still greater increase occurred in March.

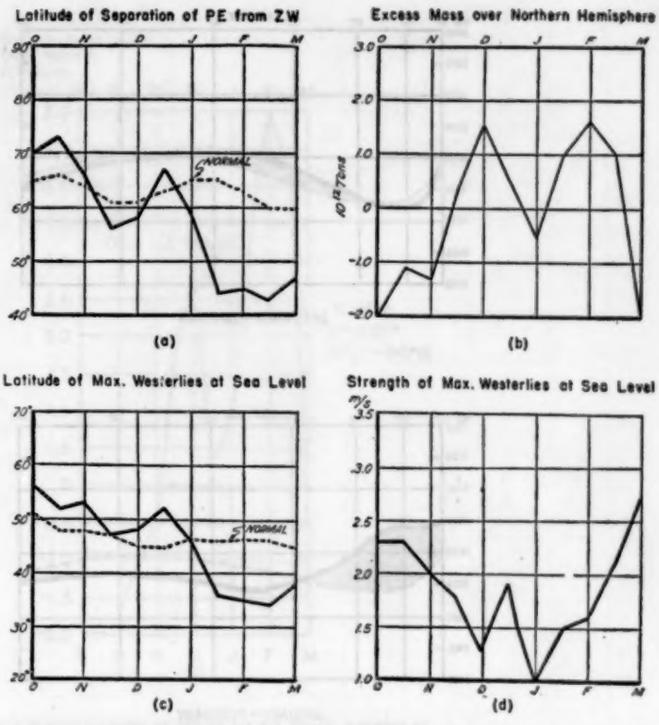

FIGURE 7.—Characteristic features of mass and general circulation indices over the entire Northern Hemisphere from October 1946 through March 1947.

EVOLUTION OF THE ABNORMAL CIRCULATION

The problem arises as to how an atmospheric circulation as radically anomalous as that of February (and March) 1947, could develop and maintain a quasi-stationary state over the Northern Hemisphere of the earth. What factors were associated with the tremendous growth, horizontally and vertically, of the polar cell of the atmospheric circulation and with the accompanying southward shift of the zonal westerlies and subtropical easterlies?

Some clues to this problem are offered by the comparison of Northern Hemisphere sea level pressure profiles and their anomalies for the period during the strong development of the intense polar cell. These are reproduced in Figure 8 for overlapping monthly means from mid-December through February. The shaded area measures the excess over normal of the mass of air which eventually contributed to the development of the strong polar cell and strong polar easterlies. In these profiles the motion and increase in area of the zone of excess mass can be traced in its slow movement northward from mid-latitudes during the December-January period to the polar regions during February. This anomaly of mass, computed for overlapping monthly periods from October to March for the area north of 47½° N. latitude, yields the results shown graphically in Figure 9 (d). From January to February the total mass of air north of 47½° N. latitude increased by over 4.63×10^{12} English tons. This is about 0.2 percent of the weight of the total mass of air in the Northern Hemisphere. As pointed out previously, this excess was compensated by a deficit of air (negative anomaly) in more southerly latitudes (see Figure 2). From the available aerological data it is not possible to obtain a similar graph for upper levels for the entire Northern Hemisphere. However, data from 0° westward to 180° W. longitude, and as far north as latitude 70° N.—slightly less than half of the hemisphere—are reliable. In order to compare the increases of mass observed aloft with those at sea level, it becomes necessary to compute the anomaly of mass for comparable areas at sea level and aloft. The appropriate sea-level graph is shown as a solid line in Figure 9 (c). Comparing this with 9 (d), for the entire hemisphere north

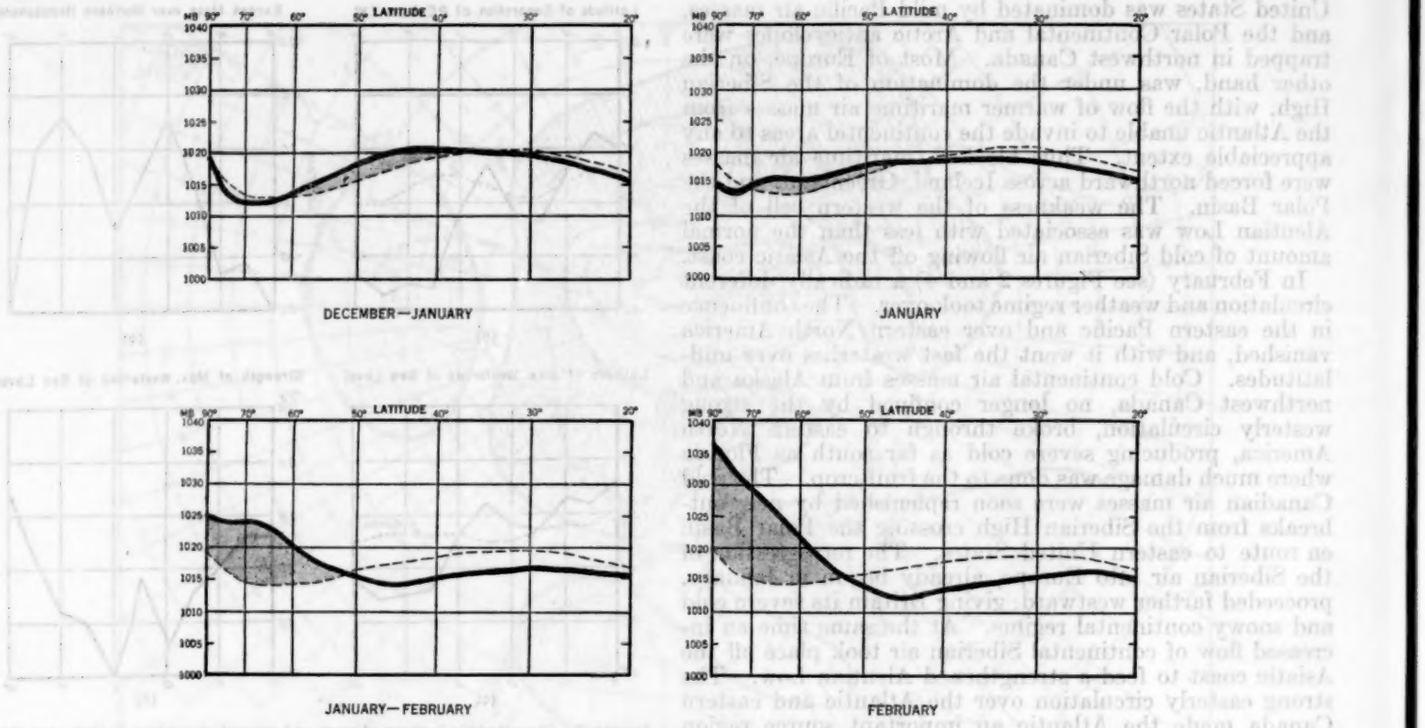

FIGURE 8.—Mean sea level pressure profiles, with normal profiles indicated by broken lines, for period from mid-December 1946 through February 1947. (Shaded areas indicate excess air mass anomaly.)

of 47½° N. latitude, it becomes apparent that the phenomenon of piling up of air over northern latitudes was circumpolar and not regional. For example, in February the excess over the restricted area was 1.6×10^{12} English tons, while for the hemisphere it was 5.5×10^{12} English tons. The percentage, 29 percent, is approximately the ratio of the two areas concerned.

To determine how the accumulation of mass was distributed with elevation, curves of the anomaly of mass at 700 mb. and 300 mb. were constructed from the available data. These curves are shown in Figure 9, parts (a) and (b). While reliable 700-mb. data were available between 0° and 180° W. longitude, 300-mb. data were available only for North America. Hence quantitative comparisons will be restricted to the 700-mb. and sea level data. However, it seems reasonable to infer from the general similarity of the 300- and 700-mb. curves that the piling up of air in high latitudes was an extremely deep phenomenon. Other evidence pointing to this conclusion will be presented later.

To find the contribution of the layer from 1,000 mb. to 700 mb. (roughly from sea level to 10,000 feet) to the sea-level excess, it is necessary not only to compute the anomaly of density of this layer but also to consider the effect of compressibility. An increase in density of the lower layers of the atmosphere may be due to increased weight (pressure) of air aloft compressing the lower layers, or to cooling processes. The effect of compressibility may be removed by the formula of Rossby [2]. This has been done in the computation of the broken curve in Figure 9 (c) which gives the contribution to the sea-level excess by the layer from 1,000 mb. to 700 mb. Some surprising and illuminating results are obtained when these two curves are compared. In the Fall and early Winter the pressure at sea level in northern latitudes increased chiefly because of the increased mass of air in the lower layers. In all probability this increase represents the radiational cooling of the imprisoned polar air masses discussed previously. However, during the period when the total mass above sea level had its greatest increase (January to February) the contribution of the layer from 1,000 mb. to 700 mb. actually *diminished*. This leads to the conclusion that the piling up of air in northern latitudes from January to February was chiefly due to accumulation of air above 700 mb. A complete investigation of the nature of this accumulation is beyond the scope of this paper and beyond the limits of available data. However, some analysis has been made of the monthly mean soundings obtained at Thule, Greenland. Two of these, for December 1946 and February 1947, are reproduced in Figure 10, along with the normal February sounding at Point Barrow, Alaska, for purposes of comparison. From the surface to about 8 km. the February sounding averages from 6 to 10 degrees warmer than the December sounding and indicates, as might be expected, a somewhat higher and colder stratosphere. The February warmth is associated with the diverted warm maritime Atlantic air (Figures 2 and 6). But in spite of the fact that it appears so much warmer than the December sounding, the pressures at station level are 23 mb. higher in February than in December. The contribution of 3-km. layers to the surface pressure differences was computed with the effect of compressibility removed, and the resulting figures are shown on the right of the elevation scale in Figure 10. From these it is clear that the lower 6 km. of the atmosphere contributed very strongly (by 15 mb.) toward making February surface pressures lower than December pressures; it is only at approximately 8 km. that the contributions become positive. If data permitted the analysis to extend throughout the entire height of the atmosphere over Thule, the sum of the numbers of the contribution column would total +23 mb. But adding them up to the 12-km. level indicates a contribution of −11 mb. It must therefore be concluded that above 12 km. there is contribution to the

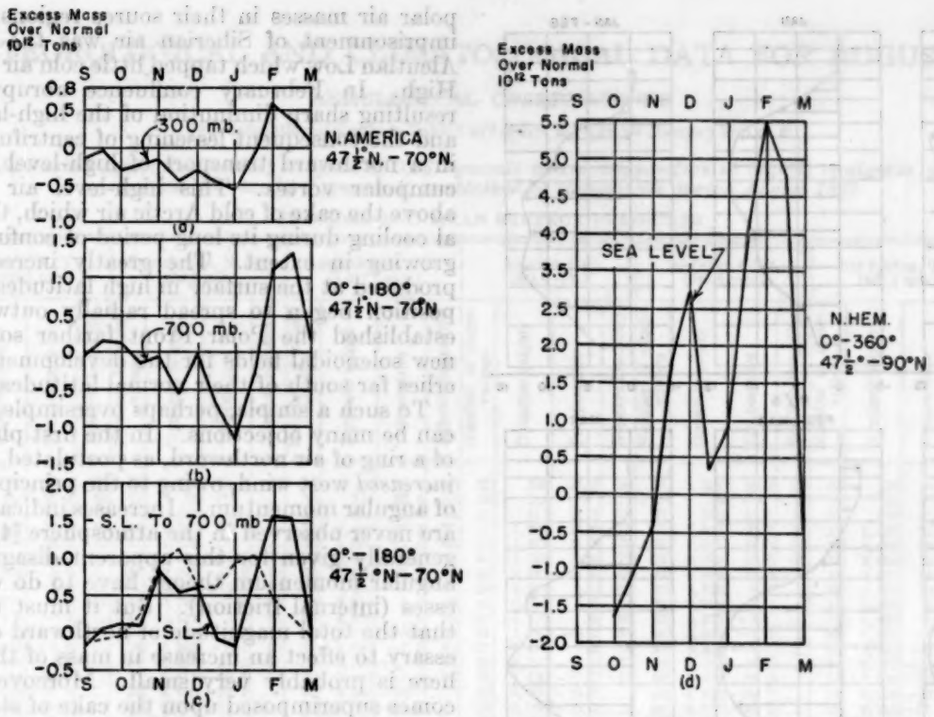

FIGURE 9.—Anomaly of mass from 47½° N. to 70° N. latitude, from September through March for (a) North America at the 300-mb. level; (b) from 0° to 180° W. longitude at the 700-mb. level; and (c) from 0° to 180° W. longitude for sea level (solid line) and for the layer from sea level to 700 mb. (d) shows anomalies of mass at sea level for the entire Northern Hemisphere north of 47½° N. latitude.

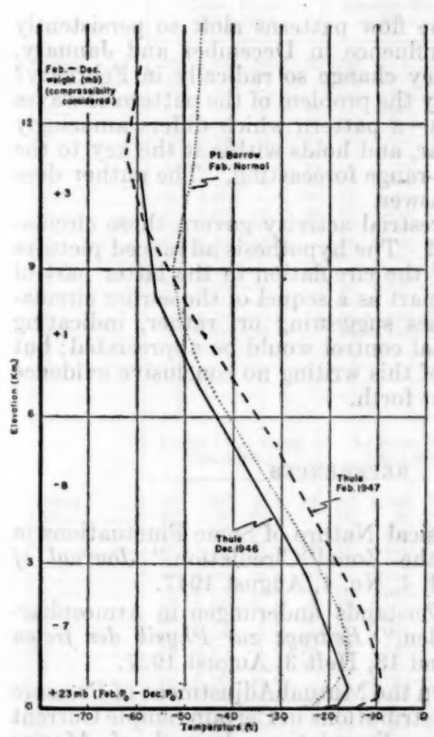

FIGURE 10.—Monthly mean soundings of the atmosphere over Thule, Greenland, for December 1946 and February 1947. Dotted line shows normal February sounding for Point Barrow, Alaska. Figures to the right of the elevation scale indicate the weight of 3-km. layers with the effect of compressibility removed.

extent of +34 mb. This does not mean that at 12 km. the difference in pressure of the two soundings is 34 mb. In fact, the difference is only 12 mb. But if a 12-mb. column of air were added to the 12-km. level of the December sounding, the increased column would compress the layers below it, and some of the air would sink below the 12-km. level. Hence, the net increase of pressure at 12 km. would finally be less than 12 mb. Compressibility computations show that a column of air at whose base the pressure is 34 mb. must be added to the December sounding to produce the differences of pressure at 12 km. and at sea level observed in the February sounding.

How could this addition have come about? The most obvious possibility is that in the higher, unobserved reaches of the stratospheric portions of the soundings of Figure 10, the February sounding was considerably colder and denser than the December sounding. This might account for the 34-mb. pressure difference. There is no possibility of definite proof or disproof, although the form of the observed curves in their uppermost portion hardly suggests this type of divergence of the two soundings. Another possibility, seemingly ridiculous at first glance, is that the height of the atmosphere—or better, the 1-mb. level—was appreciably greater over Thule in February than it was in December. This could account for the difference and appears to have no physically impossible consequences.

The principal question concerning the physical mechanism for the transfer of mass northward leads to study of the observed zonal wind speed profiles (Figure 11) as computed with the help of the geostrophic wind equation applied to overlapping monthly mean 700-mb. charts. The high-latitude strong westerlies of early Winter (through January) and the sharp displacement of the westerlies to southern latitudes in February and March

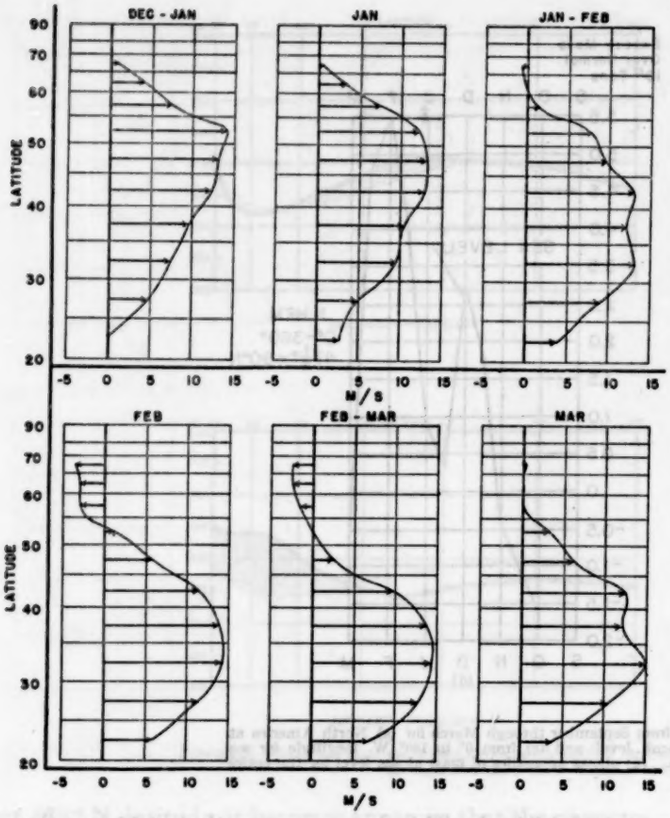

FIGURE 11.—Zonal wind speed profiles at 700 mb. (in units of meters per second) for the area from 0° to 180° W. longitude for overlapping monthly periods from mid-December 1946 through March 1947.

are clearly shown. This southward displacement does not appear as a gradual transition in spite of the overlapping character of the presentation of the data. Rather it appears that the southern maximum zonal speed took over at the expense of the northern. Thus in January a beginning of a secondary peak is indicated between 30° N. and 35° N. latitude. This peak grows to equal prominence with the higher-latitude peak from mid-January to mid-February, and then predominates in February. In March redevelopment of the northern maximum occurs.

Earlier it was pointed out that the strong high-latitude westerlies of January resulted from strong confluence over the eastern Pacific and in eastern North America. High-level charts show that confluence, detected at the 700-mb. level, extended through a thick layer of the atmosphere—at least to the tropopause. The peculiar pressure patterns favoring confluence (troughs north of ridges along the same meridian) changed radically during the first week of February and did not recover their earlier configuration. Consequently, with the cessation of confluence the speed of the high-level westerlies fell abruptly This diminution in the circumpolar vortex might well have led to northward flinging of the high-level air, owing to the lesser centrifugal force. This mechanism would be similar to the case treated by Rossby [3] in which he postulates piling up of air to the right of extensive, strong, supergradient wind currents; but in this case it is concluded that the reduction in velocity caused mass transfer to the left of the current. By use of this concept the following model for the development of the extensive polar cell of February can be evolved.

Confluence, strongly active during December and January, created strong upper-level westerlies which trapped polar air masses in their source regions. Adding to the imprisonment of Siberian air was the weakness of the Aleutian Low which tapped little cold air from the Siberian High. In February confluence abruptly ceased. The resulting sharp diminution of the high-latitude westerlies and the consequent lessening of centrifugal force resulted in a northward transport of high-level air from the circumpolar vortex. This high-level air was transported above the cake of cold Arctic air which, through radiational cooling during its long period of confinement, had been growing in extent. The greatly increased mass of air produced at the surface in high latitudes by this superimposition began to spread radially outward (southward) established the Polar Front farther south, and created new solenoidal fields for the development of strong westerlies far south of their normal latitudes.

To such a simple, perhaps oversimple, hypothesis there can be many objections. In the first place, the transport of a ring of air northward, as postulated, should lead to an *increased* west wind, owing to the principle of conservation of angular momentum. Increases indicated by this theory are never observed in the atmosphere [4], and the reasons generally given for this apparent disagreement with the angular momentum theory have to do with mixing processes (internal friction). But it must be borne in mind that the total magnitude of northward displacement necessary to effect an increase in mass of the order described here is probably very small. Moreover, as this air becomes superimposed upon the cake of stagnant Arctic air, a pressure distribution strongly opposing west winds is developed. The observed 700-mb. chart (Figure 4) shows, in fact, *east* winds at high latitudes.

Other objections which might be raised include the following:

1. Why were the flow patterns aloft so persistently favorable to confluence in December and January, and why did they change so radically in February? This is essentially the problem of the pattern of waves in the westerlies—a pattern which differs amazingly from year to year, and holds within it the key to the problem of long-range forecasting. The author does not know the answer.
2. Did extraterrestrial activity govern these circulation aberrations? The hypothesis advanced pictures the evolution of the circulation in the latter part of Winter in large part as a sequel of the earlier circulation. Hypotheses suggesting or, rather, indicating an extraterrestrial control would be appreciated; but up to the time of this writing no conclusive evidence has been brought forth.

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METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR AUGUST 1947

AEROLOGICAL OBSERVATIONS

[For description of change in Table 1 and charts, see REVIEW, January 1946, p. 6]

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during August 1947*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,007.7 mb.)				Albuquerque, N. Mex. (839.9 mb.)				Apalachicola, Fla. (1,017.1 mb.)				Atlanta, Ga. (984.0 mb.)				Auburn, Calif. (954.5 mb.)				Big Spring, Tex. (927.1 mb.)				Bismarck, N. Dak. (952.4 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	86	20.7	85	31	1,620	24.5	46	30	5	25.9	86	31	300	24.2	84	31	501	23.3	35	31	774	28.1	46	31	805	23.4	60
1,000	31	153	20.9	84	31	52	(*)	----	30	155	25.4	83	31	158	(*)	----	31	89	(*)	----	31	95	(*)	----	31	73	(*)	----
950	31	601	19.8	79	31	522	(*)	----	30	610	23.2	75	31	613	24.5	74	31	543	23.4	35	31	556	(*)	----	31	529	(*)	----
900	31	1,062	17.3	80	31	1,007	(*)	----	30	1,076	20.5	71	31	1,083	21.6	73	31	1,011	20.7	34	31	1,037	26.7	46	31	1,000	23.3	48
850	31	1,549	14.5	80	31	1,510	(*)	----	30	1,568	17.4	69	31	1,577	18.3	72	31	1,501	17.8	33	31	1,539	22.7	51	31	1,496	19.9	51
800	31	2,060	11.6	72	31	2,038	21.8	43	30	2,084	14.3	64	31	2,095	15.0	70	31	2,015	13.7	33	31	2,064	18.4	55	31	2,016	16.3	53
750	31	2,604	9.0	61	31	2,597	17.6	48	30	2,630	11.1	59	31	2,643	11.5	69	31	2,563	10.3	29	31	2,611	14.0	59	31	2,571	13.1	52
700	30	3,167	5.9	54	31	3,180	12.9	55	30	3,200	7.7	57	31	3,214	8.0	66	31	3,125	6.7	----	31	3,193	10.0	60	31	3,140	9.4	44
650	30	3,774	2.9	44	31	3,799	7.9	64	30	3,812	4.2	58	31	3,826	4.5	64	31	3,728	2.9	----	31	3,805	5.9	58	31	3,755	4.9	46
600	30	4,416	−.3	----	31	4,452	2.8	71	30	4,455	.5	61	31	4,470	.6	65	31	4,372	−1.1	----	31	4,455	1.9	56	31	4,397	.2	44
550	30	5,109	−4.2	----	30	5,153	−1.9	75	30	5,152	−3.2	59	31	5,167	−3.2	63	31	5,060	−5.6	----	31	5,153	−1.8	51	31	5,090	−4.4	37
500	30	5,853	−8.9	----	30	5,903	−6.4	69	30	5,898	−7.5	51	31	5,914	−7.2	54	31	5,800	−10.7	----	31	5,906	−5.8	41	31	5,833	−9.4	36
450	30	6,669	−14.1	----	30	6,731	−11.2	57	30	6,723	−12.2	51	31	6,735	−12.0	47	30	6,609	−16.7	----	31	6,732	−10.9	40	31	6,650	−14.9	----
400	30	7,545	−20.3	----	30	7,618	−16.5	51	30	7,602	−17.8	43	31	7,620	−17.7	42	30	7,474	−23.3	----	31	7,620	−16.8	40	31	7,521	−21.2	----
350	30	8,516	−27.8	----	29	8,610	−23.2	----	30	8,587	−24.7	----	30	8,606	−24.8	----	30	8,436	−30.7	----	31	8,609	−23.7	----	31	8,491	−28.3	----
300	30	9,604	−36.1	----	29	9,721	−31.1	----	30	9,689	−33.2	----	29	9,708	−33.2	----	30	9,512	−38.5	----	29	9,715	−31.8	----	31	9,578	−36.2	----
250	30	10,844	−45.4	----	29	10,988	−40.9	----	29	10,944	−43.1	----	29	10,961	−43.5	----	30	10,740	−47.0	----	29	10,977	−41.8	----	30	10,819	−45.1	----
200	29	12,297	−55.5	----	27	12,472	−52.0	----	28	12,412	−55.0	----	29	12,424	−55.1	----	30	12,194	−53.3	----	29	12,452	−53.3	----	29	12,297	−53.6	----
175	28	13,141	−59.6	----	23	13,325	−58.2	----	25	13,250	−61.4	----	26	13,265	−61.2	----	24	13,056	−56.2	----	24	13,299	−59.1	----	24	13,143	−56.9	----
150	27	14,099	−63.3	----	15	14,291	−63.7	----	21	14,193	−66.7	----	13	14,214	−66.5	----	21	14,024	−59.3	----	13	14,254	−64.1	----	15			
125	20	15,196	−64.2	----					7	15,286	−69.2	----					16	15,155	−61.2	----								
100	11	16,553	−61.6	----													8	16,538	−61.8	----								

Standard pressure surface (mb.)	Boise, Idaho (911.1 mb.)				Brownsville, Tex. (1,012.6 mb.)				Buffalo, N. Y. (991.7 mb.)				Caribou, Maine (994.6 mb.)				Charleston, S. C. (1,016.3 mb.)				Ciudad Victoria, Mexico (974.1 mb.)				Columbia, Mo. (987.5 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	868	25.8	29	31	6	26.8	83	31	221	21.6	80	31	191	16.5	81	31	13	23.9	93	29	335	26.4	73	30	219	27.9	63
1,000	31	37	(*)	----	31	117	26.3	82	31	148	(*)	----	31	143	(*)	----	31	155	24.8	89	29	101	(*)	----	30	127	(*)	----
950	31	501	(*)	----	31	574	23.5	81	31	600	21.7	71	31	581	17.8	66	31	608	23.0	80	29	557	24.7	70	30	588	27.6	57
900	31	975	26.3	23	31	1,040	21.0	71	31	1,063	18.9	70	31	1,045	15.4	65	31	1,077	20.2	77	29	1,028	21.1	74	30	1,062	24.5	61
850	31	1,475	22.9	22	31	1,534	18.2	65	31	1,552	15.9	67	31	1,527	12.5	66	31	1,569	17.2	73	29	1,521	17.4	78	30	1,561	21.1	62
800	31	1,998	18.5	25	31	2,051	15.4	62	31	2,066	13.1	65	31	2,034	9.9	64	31	2,085	14.2	69	29	2,037	14.0	79	30	2,083	17.6	60
750	31	2,545	13.8	28	31	2,601	12.7	55	31	2,612	9.9	62	31	2,571	7.6	53	31	2,628	11.0	67	29	2,584	10.8	76	30	2,634	14.2	58
700	31	3,122	9.0	30	31	3,173	9.5	54	31	3,177	7.0	56	31	3,134	5.0	47	31	3,201	7.6	63	29	3,153	7.8	69	30	3,211	10.5	55
650	31	3,730	4.1	34	31	3,788	5.8	51	31	3,788	3.7	48	31	3,735	1.9	48	30	3,811	4.1	61	29	3,764	4.4	68	30	3,829	6.6	52
600	31	4,374	−.9	37	31	4,436	2.1	51	31	4,429	.0	43	31	4,377	−1.6	45	29	4,456	.4	59	28	4,409	.9	67	30	4,478	2.9	44
550	31	5,058	−6.2	40	30	5,134	−2.0	49	31	5,123	−3.7	----	31	5,060	−5.7	----	29	5,150	−3.6	53	28	5,104	−3.0	68	29	5,181	−1.4	44
500	31	5,801	−11.5	35	30	5,886	−6.4	41	30	5,868	−8.2	----	31	5,805	−10.3	----	29	5,897	−7.8	49	28	5,854	−7.2	64	28	5,931	−6.1	39
450	31	6,607	−17.0	----	30	6,710	−11.3	41	30	6,689	−13.7	----	29	6,609	−15.9	----	27	6,723	−12.4	48	28	6,681	−11.8	61	28	6,756	−10.9	----
400	31	7,475	−23.5	----	30	7,596	−17.0	46	29	7,565	−19.9	----	29	7,484	−22.0	----	27	7,603	−18.5	----	28	7,562	−17.2	56	28	7,645	−16.6	----
350	31	8,436	−31.2	----	30	8,585	−23.6	----	29	8,542	−26.8	----	28	8,450	−29.2	----	26	8,586	−25.6	----	28	8,548	−24.5	----	28	8,633	−23.9	----
300	31	9,509	−39.1	----	29	9,691	−31.9	----	27	9,635	−35.1	----	28	9,533	−37.3	----	26	9,696	−33.8	----	28	9,652	−33.1	----	27	9,737	−32.6	----
250	31	10,735	−47.5	----	29	10,953	−41.8	----	27	10,881	−44.6	----	28	10,767	−46.8	----	26	10,938	−43.5	----	28	10,908	−43.3	----	26	10,994	−42.5	----
200	30	12,185	−53.3	----	28	12,425	−53.2	----	25	12,339	−54.7	----	27	12,217	−54.9	----	25	12,398	−54.7	----	24	12,377	−55.3	----	24	12,469	−53.5	----
175	27	13,047	−55.2	----	21	13,275	−59.3	----	23	13,179	−59.0	----	25	13,046	−57.4	----	21	13,242	−60.1	----	7	13,228	−61.3	----	22	13,319	−59.2	----
150	19	14,016	−57.2	----					22	14,131	−62.5	----	15	14,036	−59.0	----	8	14,199	−63.6	----					21	14,273	−64.4	----
125									16	15,253	−65.5	----	9	15,159	−61.6	----									11	15,360	−68.3	----
100									10	16,607	−67.0	----																
80									5	17,980	−64.7	----																

Standard pressure surface (mb.)	Dodge City, Kans. (924.6 mb.)				El Paso, Tex. (881.3 mb.)				Ely, Nev. (809.1 mb.)				Fort Worth, Tex. (989.7 mb.)				Glasgow, Mont. (936.3 mb.)				Grand Junction, Colo. (852.6 mb.)				Great Falls, Mont. (885.4 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	787	26.4	52	31	1,195	27.3	45	31	1,908	20.7	32	31	211	30.4	50	31	648	21.8	58	31	1,474	24.3	47	31	1,128	20.7	40
1,000	31	86	(*)	----	31	59	(*)	----	31	26	(*)	----	31	118	(*)	----	31	67	(*)	----	31	51	(*)	----	31	56	(*)	----
950	31	547	(*)	----	31	528	(*)	----	31	495	(*)	----	31	581	28.6	51	31	523	(*)	----	31	518	(*)	----	31	517	(*)	----
900	31	1,026	27.4	47	31	1,015	(*)	----	31	974	(*)	----	31	1,055	24.9	54	31	991	21.5	49	31	1,000	(*)	----	31	992	(*)	----
850	31	1,529	24.0	46	31	1,515	25.5	41	31	1,475	(*)	----	31	1,554	20.8	59	31	1,484	18.3	50	31	1,501	(*)	----	31	1,479	19.3	38
800	31	2,056	20.0	50	31	2,044	21.4	46	31	2,006	21.7	30	31	2,075	16.6	64	31	2,001	14.8	51	31	2,031	21.6	43	31	1,997	15.2	42
750	31	2,610	15.7	54	31	2,602	16.7	53	31	2,565	17.7	29	31	2,626	12.9	60	31	2,548	11.1	51	31	2,588	17.1	47	31	2,541	11.0	48
700	31	3,190	11.5	52	31	3,182	11.7	62	31	3,145	12.8	32	31	3,200	9.5	53	30	3,118	7.5	51	31	3,170	12.4	53	31	3,111	6.6	54
650	31	3,808	7.3	51	31	3,800	6.7	67	31	3,760	7.4	39	31	3,816	5.7	50	29	3,724	3.1	54	31	3,786	7.1	61	30	3,716	1.8	58
600	31	4,459	3.1	47	30	4,450	2.2	71	31	4,414	1.6	49	31	4,462	1.9	46	28	4,370	−1.6	58	31	4,440	1.9	64	30	4,356	−2.8	56
550	31	5,163	−1.2	42	29	5,150	−2.5	69	31	5,105	−3.8	53	31	5,166	−1.7	39	28	5,057	−6.1	51	31	5,134	−3.2	66	30	5,039	−7.8	60
500	31	5,914	−5.4	36	28	5,897	−6.9	55	31	5,853	−9.1	51	31	5,913	−6.0	35	28	5,798	−11.1	47	30	5,885	−8.1	59	30	5,773	−13.3	56
450	31	6,739	−10.6	----	28	6,721	−11.4	48	30	6,665	−14.7	----	31	6,742	−11.1	33	28	6,605	−16.4	44	29	6,706	−13.4	53	30	6,576	−18.9	48
400	31	7,629	−16.7	----	28	7,608	−17.1	45	30	7,542	−20.5	----	31	7,626	−17.4	39	27	7,474	−22.8	----	29	7,585	−19.3	48	30	7,435	−25.0	----
350	30	8,621	−24.1	----	26	8,595	−24.3	----	28	8,514	−27.8	----	31	8,611	−24.8	----	27	8,438	−29.9	----	29	8,564	−26.2	----	30	8,392	−32.1	----
300	29	9,722	−32.9	----	26	9,699	−32.6	----	28	9,604	−35.7	----	31	9,713	−33.4	----	27	9,517	−38.1	----	29	9,662	−34.1	----	30	9,462	−40.3	----
250	29	10,978	−43.0	----	25	10,954	−43.1	----	26	10,844	−44.8	----	31	10,966	−43.5	----	27	10,747	−47.4	----	29	10,914	−43.5	----	30	10,682	−48.8	----
200	29	12,442	−54.6	----	24	12,419	−55.0	----	24	12,303	−53.4	----	31	12,427	−55.2	----	26	12,195	−53.2	----	17	12,383	−53.8	----	29	12,125	−53.7	----
175	22	13,288	−60.5	----	20	13,260	−61.4	----	24	13,153	−57.8	----	29	13,268	−61.7	----	21	13,036	−54.5	----					29	12,981	−54.6	----
150	16	14,226	−66.1	----	14	14,201	−67.8	----	21	14,126	−62.2	----	15	14,213	−68.0	----	17	13,967	−55.7	----					19	13,960	−55.7	----
125	5	15,334	−68.3	----					9	15,293	−65.7	----	5	15,287	−71.7	----	11	15,130	−56.0	----					6	15,128	−57.4	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during August 1947*—Continued

Standard pressure surface (mb)	Greensboro, N. C. (987.3 mb.)				Hatteras, N. C. (1,017.2 mb.)				Havana, Cuba [1] (..... mb.)				Honolulu, T. H. (1,014.7 mb.)				Huntington, W. Va. (997.5 mb.)				International Falls, Minn. (973.2 mb.)				Joliet, Ill. (995.5 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	273	22.7	87	31	3	25.2	87	----	----	----	----	31	3	28.1	60	31	172	23.4	90	30	360	19.0	82	31	178	23.5	80
1,000	31	161	(*)	----	31	153	24.4	85	----	----	----	----	31	132	26.0	62	31	149	(*)	----	30	123	(*)	----	31	137	(*)	----
950	31	613	22.7	78	31	609	21.8	79	----	----	----	----	31	584	22.3	68	31	605	23.8	78	30	573	20.2	71	31	595	25.3	61
900	31	1,080	19.9	78	31	1,070	19.2	73	----	----	----	----	31	1,051	19.0	72	31	1,073	21.1	75	30	1,034	17.6	70	31	1,064	22.3	63
850	31	1,572	16.6	79	31	1,561	16.6	70	----	----	----	----	31	1,541	16.0	70	31	1,566	18.0	71	30	1,521	14.9	63	31	1,560	19.2	64
800	31	2,086	13.4	76	31	2,075	13.8	68	----	----	----	----	31	2,054	13.3	65	31	2,084	14.8	71	30	2,033	13.0	55	31	2,079	15.9	62
750	31	2,631	10.1	73	31	2,619	10.7	67	----	----	----	----	31	2,602	11.2	51	31	2,631	11.3	67	30	2,580	10.1	54	31	2,630	12.7	58
700	31	3,199	6.8	69	31	3,190	7.7	62	----	----	----	----	31	3,170	9.0	34	31	3,202	7.7	68	30	3,146	7.0	49	30	3,202	9.3	55
650	31	3,809	3.5	63	31	3,801	4.4	61	----	----	----	----	31	3,784	6.3	28	31	3,813	4.1	66	30	3,751	3.4	43	30	3,819	5.6	49
600	31	4,450	−.1	56	31	4,446	.6	62	----	----	----	----	31	4,433	3.3	----	31	4,457	.3	61	30	4,396	−.6	36	30	4,463	1.8	41
550	31	5,146	−3.9	47	31	5,144	−3.2	55	----	----	----	----	31	5,135	−.4	----	31	5,154	−3.6	50	30	5,087	−4.9	35	30	5,160	−2.2	40
500	31	5,890	−8.3	43	31	5,889	−7.5	48	----	----	----	----	31	5,889	−4.9	----	31	5,899	−7.5	39	30	5,829	−9.6	33	29	5,909	−6.6	40
450	31	6,712	−13.2	44	30	6,713	−12.6	47	----	----	----	----	31	6,714	−10.8	----	31	6,723	−12.5	41	30	6,638	−14.9	36	29	6,736	−11.7	41
400	30	7,589	−18.8	49	30	7,593	−18.7	50	----	----	----	----	31	7,603	−17.2	----	30	7,605	−18.4	44	30	7,516	−21.1	----	29	7,617	−17.5	----
350	30	8,569	−26.1	----	30	8,575	−25.6	----	----	----	----	----	31	8,588	−24.8	----	29	8,590	−25.9	----	30	8,489	−28.1	----	28	8,600	−24.7	----
300	30	9,664	−34.8	----	30	9,673	−33.9	----	----	----	----	----	31	9,690	−33.2	----	29	9,688	−34.2	----	29	9,575	−36.3	----	28	9,701	−33.1	----
250	29	10,910	−44.9	----	30	10,924	−43.7	----	----	----	----	----	30	10,946	−42.9	----	28	10,937	−44.0	----	28	10,824	−45.3	----	28	10,956	−43.0	----
200	27	12,363	−55.8	----	29	12,385	−54.4	----	----	----	----	----	28	12,417	−54.1	----	28	12,398	−55.2	----	25	12,303	−53.8	----	28	12,424	−53.9	----
175	24	13,205	−60.7	----	26	13,234	−59.3	----	----	----	----	----	20	13,265	−59.8	----	28	13,240	−60.3	----	20	13,149	−56.8	----	26	13,277	−59.3	----
150	14	14,141	−63.8	----	22	14,194	−62.8	----	----	----	----	----	12	14,209	−64.9	----	26	14,195	−65.4	----	13	14,118	−58.5	----	21	14,238	−64.5	----
125	5	15,237	−66.4	----	12	15,316	−65.3	----	----	----	----	----	----	----	----	----	19	15,292	−68.5	----	8	15,254	−60.3	----	14	15,340	−65.9	----
100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9	16,627	−67.9	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb)	Lake Charles, La. (1,015.5 mb.)				Lander, Wyo. (829.5 mb.)				Las Vegas, Nev. (942.1 mb.)				Little Rock, Ark. (1,006.1 mb.)				Mazatlan, Mexico (1,007.7 mb.)				Medford, Oreg. (965.9 mb.)				Merida, Mexico (1,010.4 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	5	25.7	87	31	1,696	20.8	39	30	574	33.6	21	31	79	27.8	68	30	14	28.8	75	31	401	24.6	40	29	27	26.3	82
1,000	31	141	25.8	83	31	39	(*)	----	30	29	(*)	----	31	134	28.2	66	30	82	28.0	76	31	95	(*)	----	29	119	25.9	81
950	31	598	23.8	76	31	507	(*)	----	30	500	(*)	----	31	592	27.2	58	30	538	23.9	78	31	550	23.4	41	29	570	23.3	78
900	31	1,065	21.1	71	31	984	(*)	----	30	985	31.0	23	31	1,066	23.8	62	30	1,009	21.6	75	31	1,014	19.4	47	29	1,042	20.5	77
850	31	1,558	18.1	68	31	1,482	(*)	----	30	1,493	26.5	26	31	1,564	20.2	64	30	1,504	18.9	72	31	1,503	15.2	54	29	1,535	17.7	74
800	31	2,076	15.0	66	31	2,010	21.3	33	30	2,023	21.8	30	31	2,084	16.5	65	30	2,024	16.0	71	31	2,013	11.1	58	29	2,052	14.8	69
750	31	2,624	11.8	62	31	2,567	17.1	34	30	2,579	16.8	35	31	2,630	12.8	65	30	2,577	12.9	71	31	2,550	7.6	56	29	2,601	11.8	64
700	31	3,196	8.5	60	31	3,148	12.2	37	30	3,160	11.6	42	31	3,208	9.4	59	28	3,148	9.5	72	31	3,113	4.1	45	29	3,171	8.7	60
650	31	3,810	4.9	61	31	3,763	7.0	42	30	3,774	6.3	48	31	3,821	5.8	53	28	3,762	5.7	74	31	3,713	.7	37	29	3,785	5.0	59
600	31	4,454	1.1	56	31	4,416	1.5	50	30	4,424	1.5	49	31	4,470	1.7	55	28	4,412	1.7	75	31	4,350	−3.4	28	29	4,429	1.0	63
550	31	5,152	−3.0	50	31	5,108	−3.6	52	30	5,120	−3.2	39	27	5,172	−2.2	50	27	5,112	−2.4	74	31	5,031	−7.8	----	28	5,126	−2.8	61
500	31	5,900	−7.2	47	31	5,857	−8.8	46	30	5,867	−7.9	----	25	5,921	−6.1	----	27	5,862	−6.4	66	31	5,765	−12.9	----	28	5,873	−7.3	64
450	31	6,722	−12.2	44	31	6,672	−14.5	40	30	6,686	−13.0	----	25	6,745	−11.0	----	27	6,692	−11.2	57	31	6,564	−18.6	----	26	6,689	−12.4	62
400	31	7,606	−18.0	41	31	7,547	−20.9	----	30	7,567	−19.4	----	25	7,634	−17.0	----	27	7,577	−16.9	56	31	7,427	−25.2	----	25	7,575	−18.0	62
350	31	8,589	−25.1	----	31	8,520	−27.8	----	30	8,544	−26.9	----	24	8,621	−24.2	----	26	8,564	−24.3	----	31	8,382	−32.5	----	24	8,559	−25.3	----
300	31	9,690	−33.7	----	31	9,609	−36.1	----	30	9,638	−35.0	----	24	9,727	−32.4	----	26	9,670	−32.5	----	31	9,450	−40.2	----	20	9,657	−33.9	----
250	31	10,941	−43.9	----	30	10,846	−45.5	----	30	10,884	−44.6	----	24	10,986	−42.2	----	24	10,928	−42.6	----	30	10,669	−47.8	----	19	10,910	−43.8	----
200	31	12,402	−55.6	----	29	12,300	−54.5	----	30	12,344	−54.5	----	24	12,459	−53.2	----	23	12,399	−54.6	----	29	12,125	−52.0	----	6	12,364	−56.6	----
175	29	13,244	−61.9	----	24	13,151	−58.5	----	30	13,189	−59.1	----	20	13,312	−58.7	----	17	13,247	−61.0	----	29	12,987	−53.4	----	----	----	----	----
150	18	14,199	−67.7	----	14	14,113	−62.2	----	18	14,153	−63.4	----	7	14,297	−62.9	----	10	14,186	−68.6	----	28	13,971	−55.5	----	----	----	----	----
125	10	15,282	−72.1	----	----	----	----	----	6	15,257	−66.4	----	----	----	----	----	----	----	----	----	22	15,131	−57.4	----	----	----	----	----
100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	10	16,540	−58.5	----	----	----	----	----

Standard pressure surface (mb)	Miami, Fla. (1,017.1 mb.)				Nantucket, Mass. (1,017.6 mb.)				Nashville, Tenn. (996.4 mb.)				New Orleans, La. (1,016.4 mb.)				North Platte, Nebr. (916.7 mb.)				Oakland, Calif. (1,012.7 mb.)				Ogden, Utah (863.5 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	4	26.3	83	27	14	18.3	95	31	180	26.2	78	31	2	25.7	88	31	849	24.2	63	31	6	18.2	73	31	1,355	22.1	49
1,000	31	154	25.7	82	27	164	18.8	91	31	148	(*)	----	31	146	25.9	85	31	73	(*)	----	31	114	17.1	74	31	51	(*)	----
950	31	607	22.8	83	27	610	18.5	76	31	605	25.9	69	31	598	23.6	77	31	536	(*)	----	31	562	16.7	58	31	517	(*)	----
900	31	1,075	20.1	78	27	1,068	16.9	61	31	1,077	22.4	71	31	1,070	20.9	72	31	1,010	26.1	54	31	1,013	17.9	34	31	996	(*)	----
850	31	1,567	17.1	74	27	1,555	15.1	51	31	1,573	18.7	74	31	1,563	18.0	69	31	1,513	24.2	47	31	1,501	16.6	27	31	1,491	23.9	35
800	31	2,082	14.0	71	27	2,066	12.7	50	31	2,092	15.4	71	31	2,080	14.8	67	31	2,041	20.5	48	31	2,014	14.0	24	31	2,019	20.7	32
750	31	2,627	11.1	65	27	2,610	10.2	42	31	2,641	12.2	65	31	2,625	11.7	63	31	2,596	16.4	50	31	2,562	11.0	----	31	2,574	16.1	36
700	31	3,198	7.7	61	27	3,177	7.1	43	31	3,213	9.0	57	30	3,200	8.4	64	31	3,177	12.1	53	31	3,127	7.8	----	31	3,153	11.2	41
650	31	3,808	4.1	60	26	3,785	4.0	40	31	3,825	5.3	55	29	3,812	4.8	63	31	3,794	7.2	57	30	3,739	4.5	----	31	3,766	5.9	48
600	31	4,453	.2	60	25	4,430	.9	----	29	4,476	1.3	57	29	4,459	1.0	60	31	4,447	2.5	54	30	4,381	.4	----	31	4,416	.6	55
550	31	5,146	−3.6	54	24	5,127	−3.2	----	28	5,172	−2.8	54	29	5,158	−2.8	55	31	5,146	−2.0	44	30	5,076	−4.1	----	31	5,110	−4.4	51
500	31	5,894	−7.8	51	24	5,872	−8.1	----	27	5,921	−7.0	51	27	5,907	−6.9	49	31	5,896	−6.6	----	29	5,822	−8.7	----	31	5,853	−9.6	47
450	31	6,710	−12.7	55	24	6,692	−13.4	----	27	6,743	−11.8	45	25	6,732	−11.6	44	31	6,716	−11.7	----	29	6,639	−14.5	----	31	6,669	−15.0	----
400	30	7,597	−18.4	57	24	7,569	−19.6	----	26	7,631	−17.4	37	25	7,618	−17.4	----	31	7,604	−17.9	----	29	7,502	−21.1	----	31	7,541	−20.7	----
350	30	8,580	−25.1	----	24	8,546	−27.0	----	26	8,616	−24.5	----	24	8,604	−24.4	----	30	8,587	−25.3	----	29	8,484	−28.4	----	30	8,514	−28.0	----
300	29	9,680	−33.4	----	24	9,638	−35.5	----	26	9,720	−32.8	----	23	9,705	−32.8	----	30	9,687	−33.7	----	28	9,581	−36.1	----	30	9,601	−36.4	----
250	29	10,934	−43.4	----	22	10,884	−45.1	----	26	10,977	−42.6	----	23	10,961	−42.7	----	30	10,938	−43.6	----	25	10,829	−44.2	----	30	10,842	−45.3	----
200	25	12,400	−55.1	----	20	12,332	−55.1	----	25	12,448	−54.0	----	23	12,427	−54.6	----	28	12,406	−55.1	----	21	12,306	−51.0	----	28	12,312	−53.9	----
175	20	13,237	−61.4	----	19	13,184	−59.2	----	25	13,292	−60.1	----	17	13,264	−61.2	----	27	13,251	−61.4	----	18	13,158	−54.3	----	26	13,160	−58.3	----
150	16	14,177	−66.1	----	14	14,123	−62.1	----	22	14,251	−65.1	----	6	14,210	−66.7	----	19	14,193	−65.5	----	6	14,178	−57.5	----	11	14,184	−62.7	----
125	9	15,280	−67.8	----	----	----	----	----	13	15,359	−68.6	----	----	----	----	----	6	15,300	−69.2	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during August 1947*—Continued

Standard pressure surface (mb.)	Oklahoma City, Okla. (968.8 mb.)				Omaha, Nebr. (977.5 mb.)				Phoenix, Ariz. (969.0 mb.)				Pittsburgh, Pa. (974.0 mb.)				Portland, Maine (1,016.0 mb.)				Rapid City, S. Dak. (901.1 mb.)				St. Cloud, Minn. (976.2 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	391	28.2	58	31	308	28.7	62	31	339	33.0	39	30	382	23.1	80	31	20	18.2	89	31	980	22.7	54	31	317	23.5	71
1,000	31	107	(*)	----	31	103	(*)	----	31	52	(*)	----	30	150	(*)	----	31	156	19.5	85	31	56	(*)	----	31	104	(*)	----
950	31	567	29.3	49	31	566	28.4	54	31	522	33.0	35	30	608	22.3	77	31	603	19.3	69	31	518	(*)	----	31	562	23.6	64
900	31	1,046	26.4	49	31	1,041	25.7	52	31	1,003	29.3	37	30	1,079	20.0	75	31	1,063	16.8	69	31	991	(*)	----	31	1,026	21.3	62
850	31	1,548	22.5	54	31	1,542	22.2	52	31	1,509	25.2	41	30	1,562	17.0	74	31	1,549	14.2	69	31	1,492	23.4	43	31	1,519	18.7	58
800	31	2,072	18.4	58	31	2,066	18.7	53	31	2,037	20.8	47	30	2,077	13.8	71	31	2,058	11.5	61	31	2,018	19.8	44	31	2,038	16.1	51
750	31	2,625	14.5	56	31	2,617	14.6	56	31	2,595	16.2	54	30	2,625	10.6	67	31	2,599	8.9	55	31	2,574	15.6	47	31	2,592	12.9	49
700	31	2,202	10.6	56	31	3,196	10.7	49	31	3,174	11.6	60	30	3,191	7.3	62	31	3,165	6.4	44	31	3,151	11.0	50	31	3,161	9.4	47
650	30	3,820	6.6	53	31	3,816	6.9	46	31	3,795	6.9	64	30	3,806	3.9	60	31	3,770	3.1	41	31	3,767	6.5	49	31	3,776	5.6	47
600	30	4,469	2.9	47	31	4,463	2.6	45	31	4,443	2.4	63	30	4,445	.7	50	31	4,415	-.3	----	30	4,415	1.4	48	31	4,421	1.1	50
550	30	5,171	-1.0	45	31	5,165	-1.5	39	31	5,144	-2.1	61	30	5,141	-3.1	43	31	5,105	-4.3	----	29	5,108	-3.6	48	31	5,118	-3.4	48
500	29	5,922	-5.4	38	31	5,914	-6.1	39	31	5,894	-6.4	48	30	5,887	-7.6	40	31	5,851	-8.6	----	28	5,853	-8.6	43	31	5,864	-7.7	45
450	27	6,751	-10.4	----	31	6,739	-11.3	36	30	6,719	-11.2	----	30	6,711	-12.8	42	31	6,665	-14.1	----	28	6,672	-13.7	----	31	6,686	-12.9	----
400	25	7,638	-16.6	----	31	7,626	-17.4	----	30	7,606	-17.0	----	30	7,589	-18.8	45	31	7,542	-20.8	----	28	7,547	-19.8	----	31	7,566	-18.8	----
350	25	8,627	-23.8	----	31	8,611	-24.8	----	30	8,593	-24.5	----	30	8,566	-26.1	----	31	8,515	-28.0	----	28	8,524	-26.7	----	31	8,546	-26.0	----
300	22	9,742	-31.8	----	31	9,713	-33.5	----	29	9,697	-33.0	----	30	9,666	-34.3	----	31	9,603	-36.2	----	28	9,618	-34.8	----	30	9,643	-34.2	----
250	22	11,006	-41.0	----	31	10,968	-43.3	----	28	10,952	-43.0	----	30	10,916	-43.9	----	31	10,842	-45.7	----	28	10,866	-44.0	----	28	10,895	-43.5	----
200	19	12,487	-52.3	----	31	12,434	-54.4	----	27	12,419	-54.5	----	30	12,378	-54.6	----	29	12,302	-54.9	----	25	12,344	-52.8	----	26	12,366	-53.3	----
175	12	13,342	-58.9	----	30	13,277	-60.2	----	24	13,255	-60.6	----	29	13,223	-59.5	----	29	13,147	-58.9	----	19	13,175	-57.2	----	23	13,177	-58.1	----
150	----	----	----	----	28	14,279	-65.0	----	----	----	----	----	25	14,180	-63.7	----	26	14,107	-62.1	----	6	14,134	-61.0	----	11	14,205	-60.6	----
125	----	----	----	----	12	15,326	-67.8	----	----	----	----	----	15	15,300	-66.9	----	19	15,174	-63.4	----	----	----	----	----	----	----	----	----
100	----	----	----	----	----	----	----	----	----	----	----	----	7	16,660	-64.5	----	8	16,623	-61.5	----	----	----	----	----	----	----	----	----
80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5	18,010	-58.3	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	San Antonio, Tex. (986.4 mb.)				San Juan, P. R. (1,015.2 mb.)				Santa Maria, Calif. (1,005.2 mb.)				Sault Ste. Marie, Mich. (990.9 mb.)				Spokane, Wash. (941.7 mb.)				Swan Island, W. I. (1,013.3 mb.)				Tacubaya, Mexico (774.6 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	240	27.2	70	30	15	26.8	81	30	71	16.9	75	31	221	18.6	82	31	598	23.7	33	31	10	26.9	84	30	2,306	15.2	77
1,000	30	118	(*)	----	30	148	25.5	82	30	115	16.3	76	31	141	(*)	----	31	69	(*)	----	31	127	26.0	84	30	75	(*)	----
950	30	575	26.4	65	30	599	21.5	85	30	559	16.3	66	31	593	20.5	71	31	523	(*)	----	31	583	22.9	84	30	534	(*)	----
900	30	1,050	22.8	69	30	1,067	18.4	80	30	1,013	18.6	39	31	1,052	18.7	64	31	992	21.0	33	31	1,048	20.0	79	30	1,012	(*)	----
850	30	1,546	19.2	74	30	1,555	15.3	77	30	1,503	18.2	27	31	1,541	16.0	59	31	1,482	16.7	37	31	1,540	17.2	71	30	1,505	(*)	----
800	30	2,065	15.6	74	30	2,068	13.1	67	30	2,019	15.7	30	31	2,054	13.2	57	31	1,994	12.1	44	31	2,056	14.6	57	30	2,033	(*)	----
750	30	2,613	12.5	68	30	2,608	10.5	50	30	2,570	12.3	34	31	2,601	10.3	52	31	2,533	7.6	51	31	2,604	11.6	53	30	2,583	12.9	78
700	30	3,188	9.4	62	30	3,181	7.3	42	30	3,138	9.0	----	31	3,167	7.2	48	31	3,095	3.3	57	31	3,174	8.0	52	30	3,157	8.8	82
650	30	3,799	5.8	60	30	3,789	3.4	43	30	3,750	5.6	----	31	3,778	3.9	48	31	3,692	-.5	53	31	3,786	4.2	53	30	3,772	4.8	86
600	30	4,451	1.9	60	30	4,432	-.5	43	30	4,397	2.0	----	31	4,421	.5	45	31	4,327	-4.6	46	31	4,429	.4	49	30	4,417	.6	90
550	30	5,148	-1.9	55	30	5,121	-4.0	35	30	5,092	-2.4	----	30	5,116	-3.8	45	31	5,005	-8.8	41	31	5,123	-3.6	44	28	5,115	-3.6	88
500	30	5,901	-5.9	47	29	5,871	-8.3	----	30	5,844	-7.3	----	30	5,860	-8.2	42	31	5,738	-13.8	42	31	5,869	-8.1	44	27	5,861	-7.5	74
450	30	6,727	-10.7	43	29	6,690	-13.2	----	29	6,663	-12.9	----	30	6,677	-13.4	----	31	6,536	-19.4	42	31	6,689	-12.9	43	26	6,687	-12.2	71
400	29	7,616	-16.4	41	29	7,569	-19.3	----	29	7,544	-19.1	----	30	7,558	-19.2	----	31	7,395	-25.7	----	30	7,569	-18.7	44	26	7,568	-17.8	67
350	28	8,607	-23.5	----	29	8,548	-26.7	----	29	8,523	-26.5	----	29	8,535	-26.2	----	31	8,348	-32.8	----	30	8,550	-25.7	----	26	8,552	-25.2	----
300	27	9,714	-31.8	----	27	9,641	-35.2	----	27	9,619	-34.5	----	25	9,625	-34.5	----	30	9,412	-40.8	----	30	9,647	-34.1	----	25	9,652	-33.7	----
250	26	10,978	-41.3	----	27	10,885	-45.0	----	26	10,868	-43.3	----	13	10,918	-43.4	----	30	10,630	-48.9	----	30	10,897	-44.2	----	21	10,910	-43.7	----
200	24	12,456	-53.0	----	26	12,340	-55.9	----	15	12,336	-52.0	----	----	----	----	----	28	12,082	-51.9	----	28	12,355	-56.1	----	8	12,378	-56.0	----
175	20	13,309	-58.9	----	22	13,179	-61.5	----	6	13,198	-56.1	----	----	----	----	----	28	12,947	-51.9	----	25	13,192	-62.6	----	7	13,212	-62.9	----
150	14	14,252	-64.8	----	18	14,119	-66.6	----	----	----	----	----	----	----	----	----	25	13,944	-52.9	----	9	14,146	-68.9	----	----	----	----	----
125	----	----	----	----	6	15,209	-71.2	----	----	----	----	----	----	----	----	----	20	15,110	-54.7	----	----	----	----	----	----	----	----	----
100	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	12	16,529	-55.1	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Tampa, Fla. (1,016.8 mb.				Tatoosh Island, Wash. (1,012.8 mb.)				Toledo, Ohio (994.6 mb.)				Washington, D. C. (1,015.7 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	9	24.7	88	31	31	13.7	92	31	191	23.0	83	31	25	24.3	80
1,000	31	156	24.8	84	31	138	12.8	90	31	143	(*)	----	31	162	23.9	76
950	31	608	22.9	77	31	573	12.2	72	31	596	22.9	71	31	611	21.6	75
900	31	1,077	20.2	73	31	1,022	11.4	61	31	1,064	20.2	73	31	1,079	18.8	76
850	31	1,569	17.1	71	31	1,498	9.2	56	31	1,555	17.3	69	31	1,569	16.0	72
800	31	2,084	14.1	68	31	1,998	6.4	55	31	2,072	14.6	65	31	2,082	13.2	66
750	31	2,631	10.8	65	31	2,529	3.9	46	31	2,619	11.4	63	31	2,625	10.1	62
700	31	3,199	7.6	62	31	3,082	1.0	41	31	3,190	8.1	58	31	3,194	6.7	59
650	31	3,810	4.0	60	31	3,678	-2.0	34	31	3,803	4.4	56	31	3,800	3.2	53
600	31	4,453	.2	62	31	4,307	-5.6	32	31	4,446	.8	53	31	4,445	.0	50
550	31	5,146	-3.6	62	31	4,985	-10.0	39	31	5,140	-3.1	45	29	5,136	-3.7	48
500	31	5,894	-7.7	62	31	5,713	-14.6	39	30	5,891	-7.1	----	29	5,884	-8.2	47
450	31	6,717	-12.4	59	31	6,508	-20.1	39	29	6,717	-12.5	----	29	6,704	-13.6	49
400	31	7,599	-17.7	55	31	7,366	-26.1	----	29	7,594	-18.5	----	29	7,581	-19.5	50
350	31	8,584	-24.6	----	31	8,317	-33.3	----	29	8,576	-25.8	----	29	8,558	-26.9	----
300	31	9,686	-33.1	----	31	9,382	-41.3	----	28	9,673	-34.4	----	29	9,651	-35.3	----
250	31	10,940	-43.4	----	29	10,596	-49.3	----	27	10,922	-44.5	----	29	10,894	-45.3	----
200	31	12,400	-55.7	----	24	12,042	-52.1	----	24	12,391	-55.4	----	28	12,348	-55.2	----
175	29	13,238	-62.0	----	24	12,906	-51.7	----	22	13,236	-60.1	----	27	13,193	-60.1	----
150	17	14,182	-67.2	----	23	13,900	-52.3	----	15	14,198	-65.2	----	24	14,150	-63.9	----
125	----	----	----	----	18	15,073	-53.4	----	----	----	----	----	13	15,265	-66.4	----
100	----	----	----	----	6	16,501	-52.2	----	----	----	----	----	5	16,630	-66.5	----

See footnotes at end of table.

LATE REPORT FOR NORTH PLATTE, NEBR.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during July 1947*—Continued

STATION AND MEAN SURFACE PRESSURE

Standard pressure surface (mb.)	North Platte, Nebr. (919.3 mb.)				Standard pressure surface (mb.)	North Platte, Nebr. (919.3 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity		Number of observations	Dynamic height	Temperature	Relative humidity
Surface	31	849	21.6	78	500	30	5,890	−8.6	46
1,000	31	108	(*)	----	450	30	6,710	−13.9	48
950	31	563	(*)	----	400	30	7,584	−19.6	----
900	31	1,034	23.5	62	350	30	8,562	−26.4	----
850	31	1,532	21.3	54	300	30	9,657	−34.5	----
800	31	2,055	18.2	51	250	30	10,906	−44.0	----
750	31	2,607	15.2	43	200	30	12,366	−55.1	----
700	31	3,185	10.9	45	175	29	13,210	−59.7	----
650	31	3,801	6.5	45	150	25	14,168	−64.0	----
600	31	4,450	1.6	46	125	16	15,272	−67.7	----
550	30	5,145	−3.3	44	100	7	16,624	−64.6	----

[1] Data not yet received.

*Temperature and relative humidity data for this level are not available or are available only for certain days. See note entitled "Change in Summarization of Radiosonde Data," p. 6, in the January 1946 issue of the MONTHLY WEATHER REVIEW.

NOTE.—All observations scheduled between 0300 and 0500, G. C. T., except at Ciudad Victoria, Mazatlan, and Merida, where they are taken near 0200, G. C. T.

"Number of observations" refers to those of dynamic height only. (In a few cases temperature or humidity data may be missing for one or more standard pressure surfaces of some observations.) Relative humidity data are not published for standard pressure surfaces having a corresponding mean temperature below −20° C.

All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the values occurring below the operating range of the humidity element. For explanation of the adjustment see article entitled "Curve Method for Obtaining Monthly Means of Relative Humidity," p. 241. MONTHLY WEATHER REVIEW, December 1944.

None of the means included in these tables are based on less than 15 observations at the surface or 5 observations at a standard pressure level.

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 5 p. m., E. S. T. (2200 G. C. T.), during August 1947. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Velocities in meters per second*

Altitude (meters) m. s. l.	Abilene, Tex. (534 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (868 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (100 m.)			Charleston, S. C. (16 m.)			Cincinnati, Ohio (152 m.)			Denver, Colo. (1,618 m.)			El Paso, Tex. (1,196 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	157	3.8	31	230	2.5	28	179	0.2	31	10	1.2	31	200	1.1	31	318	4.2	30	117	5.6	31	283	0.6	31	206	1.3	31	138	0.6	31	315	1.1	31	91	1.4	31	161	2.9
500							28	161	.2										30	120	6.2	31	252	1.2	31	211	2.3	31	160	1.9	31	293	1.3						
1,000	31	147	5.0				28	22	1.0				31	180	1.0	31	317	4.2	30	123	6.0	29	226	1.9	30	234	1.7	29	183	1.2	31	292	2.4						
1,500	31	151	5.1				28	356	1.6	31	327	4.5	30	215	1.9	31	308	3.1	28	128	4.4	24	236	3.3	28	268	3.3	28	315	.4	30	289	2.4				31	152	3.4
2,000	31	155	4.9	31	219	2.8	28	4	2.3	31	218	2.5	29	223	4.4	31	277	2.2	27	119	4.3	23	255	4.0	26	280	4.5	27	357	.9	27	306	3.1	30	89	1.6	31	133	3.0
2,500	29	148	4.7	31	203	2.6	25	14	3.4	31	222	4.2	27	240	6.5	31	240	3.9	24	119	4.2	22	266	4.4	24	290	4.6	24	314	.6	22	296	2.2	30	107	2.6	31	119	3.4
3,000	28	150	4.5	31	194	2.9	21	12	4.5	29	232	6.5	25	245	9.0	31	223	5.4	23	115	4.3	20	270	4.8	21	301	5.7	24	358	1.0	20	325	2.2	30	128	2.0	30	117	3.8
4,000	26	142	3.4	31	183	3.5	15	359	5.4	28	242	10.9	22	257	13.0	30	223	8.4	23	109	4.4	16	274	4.7	14	306	6.7	21	6	1.3	18	332	4.4	30	215	1.7	27	121	4.1
5,000	23	122	1.4	29	196	3.7	14	13	5.5	26	250	14.7	22	257	14.8	29	228	11.8	18	124	3.7	13	300	5.8				11	306	.4	11	213	2.4	29	239	3.6	26	131	3.7
6,000	17	34	2.1	29	200	5.3	11	27	4.8	25	252	16.5	20	259	17.0	28	229	14.3	17	105	3.0													23	243	7.0	25	134	3.6
8,000	13	79	4.2	24	200	7.2				20	247	22.2	15	250	21.4	20	233	19.6	13	144	2.8													18	227	12.0	19	158	4.6
10,000	10	100	6.6	23	198	9.2				12	245	24.9																					13	232	16.2	14	125	5.4
12,000				18	205	8.9																														11	80	3.9
14,000				12	222	7.8																														11	62	4.3

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,475 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (575 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (410 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (194 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	196	6.4	31	275	1.9	30	183	0.8	30	260	1.6	31	94	2.6	31	177	1.4	31	170	3.0	31	151	2.5	31	310	2.1	31	113	3.4	21	182	0.9	31	304	0.7	30	134	2.1
500							30	202	1.1				31	106	3.3	31	188	1.6				31	159	3.5	31	308	2.4	31	119	4.6	21	160	1.9	31	301	1.1	29	183	1.9
1,000							30	161	.5	30	246	1.7	31	105	2.3	30	223	2.3	31	176	4.9	31	172	3.2	31	313	2.9	31	118	3.7	21	100	1.7	31	305	.9	28	267	2.0
1,500				31	276	1.9	30	57	.6	30	240	3.1	30	84	1.3	30	243	3.3	31	179	5.3	30	171	2.4	31	274	1.8	31	113	2.8	20	60	2.9	31	321	.7	27	316	2.2
2,000	31	200	6.8	31	280	2.2	28	8	1.6	29	235	4.2	28	45	1.1	27	270	4.0	31	187	6.2	30	176	1.1	31	228	3.4	30	109	2.7	18	74	3.4	31	349	1.4	23	324	2.5
2,500	31	199	6.8	31	265	1.6	24	17	2.6	29	237	6.3	28	38	1.6	23	272	4.5	31	196	7.1	30	216	.5	31	216	5.2	29	115	2.1	14	82	3.2	29	6	1.8	20	336	2.6
3,000	31	196	7.2	30	222	1.8	22	254	3.4	26	246	8.4	27	42	1.6	21	284	5.7	28	201	7.0	29	194	.5	29	210	5.2	28	120	2.0	14	72	3.5	26	356	2.8	17	336	3.0
4,000	30	208	8.6	30	209	3.6	18	354	4.1	24	247	12.0	22	34	.8	13	292	4.7	27	209	8.6	22	137	2.5	28	228	6.0	24	137	2.3				20	14	3.9	11	352	2.9
5,000	21	219	11.2	27	211	5.3	14	323	2.2	18	247	15.5	16	53	1.0				24	206	9.1	18	134	3.2	24	225	7.7	19	142	4.0				10	360	5.3	10	362	2.5
6,000	17	221	13.5	24	221	6.5	13	4	1.4	10	252	17.9	13	42	1.4				18	208	10.2	13	97	2.7	21	232	8.2	16	158	3.3											
8,000	13	237	15.5	21	228	10.2	10	14	1.7										16	220	11.6				14	256	11.6													
10,000				14	232	11.7													12	220	19.3																			
12,000																			10	222	27.0																			

Altitude (meters) m. s. l.	Oakland, Calif. (8 m.)			Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			St. Cloud, Minn. (318 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (15 m.)			Sault Ste. Marie, Mich. (225 m.)			Seattle, Wash. (116 m.)			Spokane, Wash. (603 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	274	6.2	31	159	4.3	31	160	3.6	31	255	1.2	31	164	1.6	31	195	0.9	31	186	3.5	31	123	2.9	31	278	4.1	30	246	2.5	31	243	2.5	31	230	1.6	31	141	1.7
500	30	278	5.2	31	161	4.6	31	163	6.3	31	259	1.7				31	203	2.0	31	199	3.9	31	125	4.0	31	285	4.2	30	252	3.5	31	257	1.8				30	139	1.9
1,000	30	255	3.3	31	169	5.1	31	177	7.5	31	243	1.4	31	164	1.6	31	209	2.3	31	203	5.6	31	125	4.5	27	285	2.3	30	255	5.1	30	246	1.3	31	226	3.2	30	158	1.1
1,500	30	211	3.4	31	178	5.2	31	197	8.4	31	227	1.7	31	166	2.1	31	232	2.6	29	214	7.9	31	128	4.7	27	251	1.0	30	254	5.9	26	268	1.2	31	229	4.3	29	114	.1
2,000	30	202	3.6	29	191	4.4	31	211	9.6	31	210	2.0	31	183	2.6	30	243	3.1	29	229	9.8	31	130	4.6	27	206	2.1	29	265	6.4	23	266	1.6	31	226	4.7	28	330	1.2
2,500	30	196	4.4	28	205	4.3	30	223	9.7	31	188	1.6	31	210	4.3	29	257	3.5	26	241	11.0	28	137	5.0	27	193	4.4	26	281	6.7	22	260	1.7	31	228	6.0	23	343	2.2
3,000	30	200	4.8	25	206	4.5	30	231	8.7	31	181	2.0	31	235	5.2	29	266	4.1	26	245	10.7	27	134	4.4	26	192	5.9	26	283	7.7	21	248	2.5	28	234	6.9	22	335	2.4
4,000	30	201	6.1	20	209	4.3	28	240	7.2	30	153	2.8	31	254	8.0	26	282	5.1	22	264	11.6	24	129	3.5	25	189	7.6	23	282	9.4	17	262	4.2	25	238	9.3	15	322	3.6
5,000	29	209	7.2	14	163	2.8	26	255	6.8	27	168	3.7	29	253	11.1	20	292	5.8	20	274	11.5	21	122	3.4	23	200	8.5	15	284	9.5	15	276	5.1	22	242	14.1	14	296	3.7
6,000	28	211	9.0	12	124	2.3	24	260	6.8	27	180	4.3	25	255	12.4	19	308	4.2	19	268	14.0	16	100	3.2	21	204	7.6	11	283	11.4	13	264	7.7	19	246	15.4	11	288	3.4
8,000	24	223	14.4				23	259	8.0	22	204	5.7	16	238	17.4	16	330	3.6				10	87	4.7	17	216	9.1				10	274	9.3	10	250	15.2					
10,000	16	234	14.5				19	250	8.4	11	227	10.0				14	305	3.2																						
12,000	10	243	15.2				16	238	5.7																															
14,000							11	211	8.6																															

TABLE 3.—*Maximum free-air wind velocities (m p. s.) for different sections of the United States based on pilot balloon observations during August 1947*

Section	Surface to 2,500 meters (m. s. l.)					2,501 to 5,000 meters (m. s. l.)					Above 5,000 meters (m. s. l.)				
	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m.) m. s. l.	Date	Station
Northeast [1]	41.2	nnw.	2,442	22	Caribou, Maine	36.2	wsw.	3,392	15	Caribou, Maine	68.5	ne.	13,102	10	Portland, Maine.
East-Central [2]	25.2	wsw.	470	16	Richmond, Va.	27.0	e.	3,719	29	Raleigh, N. C.	48.0	ne.	12,130	10	Nashville, Tenn.
Southeast [3]	26.5	ese.	682	18	Miami, Fla.	29.6	nw.	5,000	4	Charleston, S. C.	39.0	nne.	11,380	6	Charleston, S. C.
North-Central [4]	41.5	nw.	1,783	11	Rapid City, S. Dak.	38.5	w.	4,992	17	Williston, N. Dak.	74.0	wnw.	10,651	29	Sault Ste Marie, Mich.
Central [5]	36.5	sw.	2,283	2	Goodland, Kans.	33.2	ssw.	4,693	20	Goodland, Kans.	72.0	sw.	13,058	30	Lander, Wyo.
South-Central [6]	26.5	ssw.	1,714	5	Amarillo, Tex.	26.0	ne.	4,680	7	New Orleans, La.	38.0	ne.	11,709	11	Little Rock, Ark.
Northwest [7]	29.4	wnw.	945	5	Ellensburg, Wash.	43.0	w.	4,962	12	Burns, Oreg.	77.5	sw.	11,834	9	Great Falls, Mont.
West-Central [8]	32.9	w.	2,273	12	Rock Springs, Wyo.	41.0	ssw.	5,000	22	Salt Lake City, Utah	59.0	sw.	11,409	6	Red Bluff, Calif.
Southwest [9]	37.1	ssw.	2,047	5	Sandberg, Calif.	29.1	ssw.	2,501	5	Sandberg, Calif.	70.5	ssw.	11,580	28	Las Vegas, Nev.

[1] Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and northern Ohio.
[2] Delaware, Maryland, Virginia, West Virginia, southern Ohio, Kentucky, eastern Tennessee, and North Carolina.
[3] South Carolina, Georgia, Florida, and Alabama.
[4] Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
[5] Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.
[6] Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except El Paso), and western Tennessee.
[7] Montana, Idaho, Washington, and Oregon.
[8] Wyoming, Colorado, Utah, northern Nevada, and northern California.
[9] Southern California, southern Nevada, Arizona, New Mexico, and extreme west Texas.

RIVER STAGES AND FLOODS FOR AUGUST 1947

C. R. JORDAN

Precipitation during August was below normal over most of the United States. There were several spots scattered throughout the country where precipitation was normal or above: the largest area, in the southern Rockies, comprised Utah, Arizona, and adjacent areas of Idaho, Wyoming, Colorado, and New Mexico. Rainfall was comparatively heavy in southern and eastern Texas. A broad area through the central part of the country reported less than half the normal rainfall for August.

There was no general flooding during the month, although scattered summer storms caused local floods in Ohio, Virginia, and Colorado. Heavy rains associated with the remnants of a tropical storm caused some flooding of the Little River in Arkansas and Oklahoma.

Unusually heavy rains near and east of Hazard, Ky., on August 3–5, resulted in a flash flood on the North Fork, a headwater tributary of the Kentucky River. The river at Hazard rose 14 feet within 6 hours. There was a sharp rise at Jackson, Ky., the next station downstream, but flood stage was not reached. Flooding was confined to low spots along the stream. There was considerable damage to property but no lives were lost.

A flash flood was reported on the afternoon of August 12 in a normally dry gulch 18 miles west of Canon City, Colo. The floodwaters collapsed a bridge over the gulch; a truck which was passing over the bridge dropped 25 feet into the bed of the gulch and was covered with debris. The driver of the truck lost his life.

Unusually high flood peaks were reported in the Little River Basin in Arkansas and Oklahoma from heavy rain that accompanied the inland passage of a tropical storm late in August. A few stations reported more than 10 inches of rain in 24 hours. A new record for 24-hour precipitation of 9.18 inches was established at Dallas, Tex., during the passing of the storm. The Little River at Horatio, Ark., rose 28 feet in 24 hours and a rise of 18 feet was recorded at Whitecliffs, Ark., in the same length of time. Run-off rates were very high in spite of the dry conditions that prevailed at the beginning of the rain. Damage to highways, railroads, crops, and livestock was reported heavy.

Flood stages were exceeded slightly in the headwaters of the Trinity River.

FLOOD STAGE REPORT FOR AUGUST 1947

[All dates in August unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE	*Feet*			*Feet*	
Edisto: Orangeburg, S. C.	7	14	15	7.3	15
		20	20	7.4	20
MISSISSIPPI SYSTEM					
Missouri Basin					
Missouri:					
St. Joseph, Mo.	17	June 13	July 10	20.4	June 16
Lexington, Mo.	22	June 6	July 11	28.2	June 24
Ohio Basin					
North Fork: Hazard, Ky.	20	5	5	26.0	5
Red Basin					
Little:					
Horatio, Ark.	27	29	30	33.0	29
Whitecliffs, Ark.	25	31	Sept. 1	26.5	31
WEST GULF OF MEXICO DRAINAGE					
East Fork: Rockwall, Tex.	10	29	30	12.2	30–31
Trinity: Dallas, Tex.	28	27	28	32.6	27
Guadalupe: Gonzales, Tex.	20	28	28	24.7	28

[1] Provisional.

CLIMATOLOGICAL DATA FOR AUGUST 1947

CONDENSED CLIMATOLOGICAL SUMMARY OF TEMPERATURE AND PRECIPITATION BY SECTIONS

[For description of tables and charts, see Review, January 1943, p. 15]

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Section	Temperature								Precipitation					
			Monthly extremes								Greatest monthly		Least monthly	
	Section average	Departure from the normal	Station	Highest	Date	Station	Lowest	Date	Section average	Departure from the normal	Station	Amount	Station	Amount
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	81.2	+1.4	2 stations	105	[1] 4	Haleyville	60	27	3.68	−1.07	Bishop	10.71	Uniontown	0.32
Arizona	78.0	−.6	Mohawk	118	7	2 stations	34	[1] 3	3.09	+.73	McNary	8.66	2 stations	.19
Arkansas	84.5	+4.3	Conway	111	31	Perryville	56	16	2.20	−1.33	Grannis	11.53	Big Lake Outlet	.14
California	70.5	−1.8	Cow Creek	120	6	Tamarack	22	22	.17	+.07	Coyote Wells	5.00	107 stations	.00
Colorado	66.9	+1.2	Eads	108	[1] 9	2 stations	24	[1] 26	2.38	+.42	Wolf Creek Pass	7.59	Fort Morgan	.00
Florida	81.4	−.1	Pensacola Airport	105	5	Ralford	60	[1] 17	7.08	+.04	Clearwater	17.65	Key West Airport	2.27
Georgia	79.5	.0	Cedartown	105	4	Tallapoosa	55	22	4.95	−.25	Hawkinsville	10.11	Dalton	1.04
Idaho	65.4	−.9	Swan Falls	105	2	Sun Valley	23	23	.61	−.02	Conda	2.93	3 stations	.00
Illinois	81.9	+7.3	Carbondale	109	6	2 stations	45	1	2.13	−1.27	Gibson City	6.97	Quincy (8W)	.11
Indiana	79.8	+6.1	2 stations	107	6	La Porte	45	1	3.44	+.10	Greencastle	8.64	Hasleton	.18
Iowa	80.6	+7.9	Monroe	109	3	Spencer	40	26	1.49	−2.28	Allison	4.18	Clarion	.18
Kansas	83.2	+5.2	Lincoln	111	[1] 9	2 stations	52	26	1.84	−1.31	Topeka	6.39	Scandia	.07
Kentucky	79.6	+3.7	2 stations	106	[1] 4	Williamsburg	53	26	3.89	+.17	Benham	8.54	Henderson	.92
Louisiana	83.3	+1.4	2 stations	109	[1] 6	North Livingston Twr.	61	2	3.45	−1.68	Morgan City	9.89	Jones	.16
Maryland-Delaware	76.3	+2.8	3 stations	99	[1] 14	Oakland, Md	47	2	3.26	−1.22	Frostburg, Md	10.20	Annapolis, Md	1.14
Michigan	74.1	+6.8	Greenville	104	6	2 stations	29	1	2.56	−.20	Milford	7.46	Bad Axe	.23
Minnesota	73.7	+6.0	Beardsley	110	10	Grand Marais	33	1	3.65	+.36	New Ulm	7.68	2 stations	.78
Mississippi	82.9	+2.1	3 stations	106	[1] 4	2 stations	60	[1] 11	2.68	−1.46	Bay St. Louis	8.78	Scott	.21
Missouri	83.4	+6.8	Carthage	109	31	Elsberry	56	1	1.81	−2.00	Ellington	6.33	Warrenton	.08
Montana	65.4	+.4	Yellowtail Dam	107	4	West Yellowstone	22	24	1.98	+.89	Plentywood	6.75	Holter Dam	.24
Nebraska	79.5	+6.0	Nenzel (near)	110	4	Gordon	42	25	.98	−1.69	Koshopah (near)	3.59	Nenzel (near)	T
Nevada	70.2	−.5	Overton	115	6	Fish Creek Ranch	24	23	.29	−.20	Kyle Canyon R. S.	2.05	15 stations	.00
New England	70.4	+3.3	6 stations	99	[1] 13	Presque Isle, Me	32	30	2.07	−1.68	Westbrook, Conn	7.46	Rockland, Me	.26
New Jersey	74.7	+2.7	Paterson	100	13	2 stations	42	2	3.83	−.89	Hammonton	10.19	Cape May	.42
New Mexico	71.1	+.3	Orogrande	106	7	Eagle Nest	34	2	2.98	+.51	Aspen Grove	9.19	Arch	.10
New York	72.4	+4.7	Saratoga Springs	102	25	3 stations	36	[1] 1	2.42	−1.26	New York City	8.77	Cobleskill	.41
North Carolina	77.2	+1.3	2 stations	100	[1] 1	Banners Elk	47	2	4.89	−.60	Clinton	11.00	Montreat	1.79
North Dakota	70.9	+4.3	Fort Yates	110	3	Center	34	25	2.67	+.58	Hannah	6.64	Forman	.21
Ohio	77.3	+5.6	Napoleon	111	6	Mansfield	41	1	4.38	+1.00	Chillicothe	8.49	2 stations	1.71
Oklahoma	85.1	+3.5	3 stations	113	[1] 9	Kenton	53	26	1.17	−1.72	Carter Mountain Tower.	11.54	5 stations	.00
Oregon	63.1	−2.2	2 stations	103	[1] 2	Fremont	23	31	.40	−.02	Valsetz	2.40	5 stations	.00
Pennsylvania	74.0	+3.7	Farrell	100	[1] 12	2 stations	37	2	3.85	−.30	Farrell	11.46	Holtwood	.87
South Carolina	79.0	−.6	Sumter	99	2	3 stations	59	[1] 6	5.66	−.02	Kingstree	11.96	Walhalla	1.56
South Dakota	77.1	+6.0	3 stations	115	[1] 9	Custer	35	25	1.03	−1.08	Custer	4.26	Roscoe	T
Tennessee	80.5	+3.7	Savannah	108	5	Crossville	50	31	3.12	−.88	Gatlinburg	8.31	Samburg	.14
Texas	83.0	+.2	Throckmorton	119	30	2 stations	52	22	3.04	+.67	College Station	12.60	2 stations	.00
Utah	69.5	−.4	Zion National Park	108	6	Woodruff	27	31	2.18	+1.11	Bryce Canyon	6.48	Lucin	.12
Virginia	76.4	+2.3	Columbia	100	31	Monterey	46	2	4.05	−.35	Newcastle	9.40	New Canton	.43
Washington	64.0	−1.8	Richland	102	2	Stockdill Ranch	28	28	.47	−.35	Diablo Dam	2.33	Quincy	.00
West Virginia	75.8	+4.0	McNeill	101	14	Canaan Valley	39	2	4.65	+.56	Gary	9.66	2 stations	1.22
Wisconsin	75.0	+7.2	Danbury	107	5	Land O'Lakes	33	26	3.63	+.27	Durand	8.02	Grand River Lock	1.06
Wyoming	66.7	+2.6	Arvada	107	3	Bondurant	21	[1] 24	1.07	+.02	Bedford	3.19	Midwest	.15
Alaska (July)	56.7	+1.2	Skwentna	90	21	Puntilla	26	10	2.25	−.39	Radioville	13.07	Barrow	.09
Hawaii	75.0	+.4	Waianae	93	[1] 4	Haleakala R. S.	42	22	6.74	+.44	Kukui	46.00	Ukumehame	.00
Puerto Rico	79.3	+.4	Guayama	96	17	Garzas	58	8	5.90	−1.03	Rio Blanco (1800')	16.53	Culebra Island	1.25
Hawaii (July)	74.2	+.3	Kaanapali	91	23	Haleakala R. S.	41	[1] 3	4.96	−.75	Kukui	36.00	7 stations	.00

[1] Other dates also.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR AUGUST 1947

District and station	Elevation of instruments: Barometer above sea level	Thermometer above ground	Anemometer above ground	Pressure: Station	Sea level	Departure from normal	Temperature of the air: Mean	Departure from normal	Maximum	Date	Mean maximum	Minimum	Date	Mean minimum	Greatest daily range	Total degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	Days with 0.01 inch or more	Wind: Average hourly velocity	Prevailing direction	Maximum velocity: Miles per hour	Direction	Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms
NEW ENGLAND	Ft.	Ft.	Ft.	Mb.	Mb.	Mb.	°F.	°F.	°F.		°F.	°F.		°F.	°F.		°F.	%	In.	In.	In.		Mi.								0-10	In.	In.	
							70.1	+3.2										83	1.59	−1.9											5.0			
Eastport	75	67	85	1,015.6	1,018.3	+3.1	63.1	+2.4	89	12	72	51	28	55	33	86	54	78	.64	−2.4	0.25	5	7.9	s.	27	e.	20	10	12	9	4.9	0.0	0.0	4
Greenville, Maine	1,070	6	41	960.0	1,019.0	+2.7	64.7	+2.4	93	14	80	33	28	50	46	106	59	82	1.02	−2.4	.30	7	3.3	sw.	17	------	31	4	21	6	----	.0	.0	6
Portland, Maine	103	5	43	1,014.6	1,018.3	+2.4	68.6	+4.0	99	13	81	45	2	56	38	38	61	82	.27	−2.9	.17	5	7.6	s.	26	n.	29	13	11	7	4.6	.0	.0	3
Concord [1]	289	4	45	1,008.1	1,018.6	+2.7	70.3	+4.8	98	14	83	42	2	57	37	20	62	80	1.18	−2.4	.62	6	5.5	se.	21	nw.	1	13	7	11	5.1	.0	.0	3
Burlington [1]	403	6	51	999.7	1,017.6	+2.4	73.1	+5.2	97	25	84	46	27	62	36	23	64	76	1.83	−1.5	.91	5	7.6	s.	30	s.	30	10	10	11	5.4	.0	.0	5
Boston [1]	124	33	62	1,014.3	1,018.8	+2.9	73.2	+3.3	99	13	82	54	2	64	28	4	64	78	2.19	−1.4	1.09	7	9.7	sw.	42	ne.	26	14	10	7	4.4	.0	.0	3
Nantucket [1]	12	4	34	1,018.6	1,019.0	+2.7	68.0	+.2	81	26	76	49	2	60	24	19	64	92	.28	−3.1	.27	3	11.1	ne.	26	e.	20	10	14	7	5.2	.0	.0	2
Block Island	26	11	46	1,017.6	1,018.6	+2.3	70.8	+2.3	82	15	76	59	1	65	17	1	66	91	.69	−3.0	.26	5	12.7	sw.	32	n.	26	14	8	9	4.6	.0	.0	4
Providence [1]	159	46	60	1,013.2	1,019.0	+2.7	74.0	+3.0	97	15	84	54	2	64	27	0	64	85	2.01	−1.5	.72	6	7.1	sw.	20	sw.	23	13	9	9	5.1	.0	.0	3
Hartford [1]	159	5	44	1,012.9	1,018.6	+2.3	73.2	+4.3	95	13	84	50	2	63	28	1	65	83	3.31	−1.0	1.12	7	6.5	s.	22	se.	7	11	8	12	5.4	.0	.0	5
New Haven [1]	107	5	39	1,014.9	1,018.6	+2.3	72.1	+3.5	90	15	80	54	2	64	23	1	66	84	4.12	+.2	2.00	7	6.2	sw.	18	se.	7	13	8	10	4.9	.0	.0	4
MIDDLE ATLANTIC							76.5	+3.0										81	4.00	−.2										5.7			
Albany [1]	97	26	40	1,014.2	1,018.0	+1.7	73.9	+4.9	99	25	85	46	2	62	34	5	64	78	.73	−2.4	.29	6	6.2	s.	27	n.	25	10	12	9	5.7	.0	.0	6
Binghamton [2]	871	60	79	988.5	1,018.6	+2.0	73.8	+5.8	95	13	84	44	2	64	35	8	65	83	4.50	+.9	2.34	5	4.3	e.	21	sw.	9	4	18	9	6.3	.0	.0	8
New York [2]	314	415	454	1,007.8	1,019.0	+2.7	75.2	+2.1	94	15	83	61	1	68	24	0	66	80	8.77	+4.4	3.69	9	8.8	s.	42	sw.	15	12	6	13	5.4	.0	.0	6
Harrisburg [1]	374	30	49	1,005.8	1,018.3	+1.7	76.4	+3.8	96	25	86	53	2	67	30	1	64	76	3.24	−.8	2.03	8	5.5	sw.	26	n.	9	8	8	15	6.2	.0	.0	6
Philadelphia [3]	114	8	57	1,014.2	1,018.6	+2.0	76.4	+1.6	93	15	84	61	2	69	20	0	68	84	7.15	+2.5	2.06	11	6.6	s.	22	e.	8	10	10	11	5.6	.0	.0	7
Reading	323	47	306	1,006.8	1,018.3	+2.0	76.4	+3.5	95	13	86	54	2	67	27	0	----	---	3.61	−.6	1.72	8	6.8	se.	30	e.	20	9	9	13	5.9	.0	.0	8
Scranton	805	72	104	989.8	1,018.6	+1.7	74.0	+4.2	92	12	83	47	2	65	31	6	----	---	1.39	−2.3	.46	11	4.6	n.	21	nw.	19	8	13	10	6.0	.0	.0	8
Atlantic City	52	37	172	1,016.3	1,018.0	+1.7	74.6	+2.1	89	31	79	61	2	70	19	0	69	87	3.51	−1.0	2.02	7	13.3	e.	35	ne.	27	12	8	11	5.5	.0	.0	5
Trenton	190	89	107	1,011.5	1,018.3	+2.0	75.1	+2.1	95	15	84	57	2	66	24	0	----	---	5.64	+.9	2.61	11	7.0	s.	41	n.	26	10	10	11	5.4	.0	.0	8
Baltimore [2]	123	100	215	1,013.9	1,018.3	+2.0	78.6	+3.1	97	14	87	61	2	71	23	0	68	78	3.74	−.6	1.05	8	7.7	s.	33	e.	20	11	11	9	5.2	.0	.0	7
Washington [2]	112	56	100	1,014.6	1,018.6	+2.3	79.6	+4.5	97	14	89	61	2	70	28	0	68	77	3.68	−.3	1.30	8	5.7	s.	24	ne.	9	12	9	10	5.5	.0	.0	7
Cape Henry	18	8	54	1,016.9	1,017.6	+1.3	77.6	+.7	95	15	83	67	7	72	21	0	71	84	5.86	+1.0	4.70	4	9.3	e.	34	n.	20	11	10	10	5.3	.0	.0	6
Lynchburg [1]	686	4	50	993.9	1,018.3	+1.4	77.1	+2.8	95	20	87	61	6	67	26	0	69	84	3.48	−.3	2.39	9	5.6	n.	23	s.	8	2	20	9	6.1	.0	.0	12
Norfolk [2]	91	80	125	1,014.9	1,018.3	+1.4	78.8	+1.4	93	16	85	68	7	72	21	0	70	83	2.17	−3.0	1.58	7	7.7	ne.	18	sw.	16	4	15	12	6.2	.0	.0	4
Richmond [2]	144	11	52	1,012.2	1,017.3	+.7	79.4	+2.9	96	14	89	63	6	70	26	0	69	82	2.52	−1.9	1.71	7	5.9	s.	27	nw.	26	10	10	11	5.6	.0	.0	6
SOUTH ATLANTIC							79.5	+1.6										84	5.51	−.1										6.3			
Asheville	2,253	77	92	941.4	1,018.6	+1.3	74.9	+4.4	91	21	85	59	30	64	28	0	66	85	4.27	+.1	1.84	11	5.2	nw.	26	nw.	2	2	16	13	6.8	.0	.0	13
Charlotte [2]	779	63	86	990.9	1,018.0	+1.1	79.6	+2.5	95	17	89	67	30	70	26	0	69	82	3.41	−1.7	.97	14	5.1	s.	18	s.	12	2	17	12	6.6	.0	.0	15
Greensboro [1]	886	6	56	987.5	1,019.0	+1.7	78.2	+2.6	93	22	89	63	6	68	29	0	69	85	3.26	−2.0	1.04	12	5.9	ne.	28	n.	22	3	17	11	6.4	.0	.0	11
Hatteras	11	5	50	1,016.9	1,017.3	+.7	79.0	+1.0	87	15	83	68	7	75	14	0	73	84	9.84	+4.1	3.90	13	8.8	sw.	23	n.	6	3	10	18	7.3	.0	.0	13
Raleigh [2]	376	5	69	1,004.4	1,018.0	+1.4	79.0	+2.0	93	16	89	61	6	69	27	0	70	88	5.19	−.2	1.63	11	5.2	sw.	17	sw.	15	4	16	11	5.8	.0	.0	9
Wilmington	72	73	107	1,015.2	1,017.6	+.7	79.6	+2.0	92	4	87	65	6	72	22	0	72	86	6.11	−.2	1.94	14	6.3	nw.	24	e.	4	6	16	9	6.1	.0	.0	19
Charleston [2]	48	11	92	1,015.9	1,018.0	+1.1	81.2	+.2	95	2	88	72	6	75	19	0	72	88	6.79	+.3	3.31	14	7.8	se.	24	w.	26	5	16	10	6.0	.0	.0	15
Columbia, S. C. [3]	347	70	91	1,005.4	1,018.0	+1.1	80.6	+1.0	95	1	90	66	13	72	25	0	72	82	6.33	+.9	2.50	11	5.9	s.	19	n.	25	9	11	11	5.4	.0	.0	11
Greenville, S. C. [4]	1,040	18	36	981.7	1,018.3	+1.7	78.6	+2.8	95	1	88	65	31	69	26	0	69	80	4.10	−1.4	3.04	12	6.3	ne	45	n.	26	2	16	13	6.7	.0	.0	15
Augusta [2]	182	62	77	1,011.5	1,017.6	+1.3	80.4	.0	96	1	89	67	10	72	25	0	70	82	7.18	+2.2	1.50	14	4.5	s.	25	n.	26	5	17	9	6.1	.0	.0	15
Savannah [1]	65	73	152	1,015.6	1,018.0	+1.4	80.7	+.8	97	2	89	69	4	73	26	0	74	86	4.68	−2.6	.90	14	7.7	se.	43	ne.	4	0	21	10	6.6	.0	.0	13
Jacksonville [2]	43	86	110	1,016.3	1,018.0	+1.1	82.2	+.5	96	4	90	72	20	75	23	0	73	83	4.93	−.9	.95	16	7.3	e.	24	se.	19	6	16	9	6.0	.0	.0	13
FLORIDA PENINSULA							82.0	−.3										81	7.61	+1.4										6.6			
Key West [2]	21	10	64	1,015.2	1,015.9	+.3	83.6	+.1	91	8	89	72	22	79	16	0	74	78	3.89	−.6	1.86	13	8.1	e.	23	s.	20	3	20	8	6.1	.0	.0	10
Miami [2]	25	242	249	1,015.9	1,016.6	.0	80.9	−1.2	89	30	85	69	19	76	16	0	74	80	7.34	+1.5	4.11	16	11.0	se.	46	se.	19	4	14	13	6.6	.0	.0	14
Tampa [1]	35	6	43	1,015.9	1,017.3	+.7	81.6	+.1	96	4	90	68	19	73	21	0	73	86	11.59	+3.4	2.87	23	6.5	ne.	34	s.	1	1	15	15	7.1	.0	.0	24
EAST GULF							81.4	+1.3										81	4.82	−.4										5.8			
Atlanta [1]	1,173	33	72	983.5	------	-----	79.2	+1.2	100	4	89	65	7	69	29	0	68	77	5.67	+1.0	1.67	13	7.6	se.	27	n.	2	3	18	10	6.4	.0	.0	12
Macon [2]	370	79	87	1,004.4	1,017.6	+1.0	79.8	−.1	96	2	89	67	12	70	28	0	70	81	3.03	−1.3	.93	13	5.1	n.	30	n.	4	3	11	17	6.9	.0	.0	15
Apalachicola	35	11	51	1,015.9	1,017.3	+1.0	81.2	0	95	28	88	72	14	75	19	0	74	84	5.92	−1.6	1.23	15	7.3	se.	39	e.	19	5	19	7	5.5	.0	.0	14
Pensacola [2]	56	54	79	1,015.6	1,017.3	+1.0	82.0	+1.1	103	5	89	70	14	75	33	0	74	83	7.80	−.2	1.77	15	6.7	se.	26	e.	5	7	13	11	5.6	.0	.0	13
Anniston [2]	----	---	---	997.3	1,019.3	+3.7	79.9	+1.7	102	4	92	64	5	68	38	0	70	83	6.56	+2.5	2.36	12	----	ne.	---	------	--	0	19	12	----	.0	.0	10
Birmingham [1]	700	5	62	993.2	1,018.0	+1.1	81.0	+2.5	103	4	92	67	27	71	29	0	70	80	5.52	+1.3	2.48	10	5.9	se.	34	ne.	10	5	14	12	6.4	.0	.0	10
Mobile [2]	57	86	161	1,015.6	1,017.6	+1.3	82.6	+1.6	101	5	90	71	14	75	23	0	72	84	4.62	−2.3	1.00	11	6.5	s.	24	nw.	6	9	12	10	5.5	.0	.0	13
Montgomery [2]	218	92	105	1,009.8	1,017.6	+1.0	81.7	+.9	103	5	91	69	15	73	29	0	72	80	5.08	+.8	2.06	14	5.7	e.	25	e.	12	8	13	10	5.7	.0	.0	14
Meridian [2]	375	67	92	1,004.4	1,017.3	+1.4	82.0	+2.5	100	5	93	69	14	72	29	0	70	78	.86	−3.7	.50	6	4.9	e.	22	ne.	6	15	13	3	4.4	.0	.0	7
Vicksburg [2]	247	82	102	1,008.1	1,016.6	+.3	83.1	+2.3	98	7	93	69	15	74	24	0	72	83	2.65	−.8	1.06	5	6.3	s.	25	n.	14	13	9	9	4.7	.0	.0	8
New Orleans	53	76	84	1,014.9	1,016.9	+1.0	83.2	+1.0	98	5	91	71	8	75	24	0	74	78	5.28	−.5	1.87	15	5.7	se.	24	e.	31	1	14	16	7.0	.0	.0	10
WEST GULF							84.3	+1.8										73	4.38	+1.1										5.0			
Shreveport [1]	249	5	64	1,007.1	1,015.9	+.7	85.6	+3.9	106	9	97	70	15	74	32	0	67	70	2.77	+.1	1.14	7	7.1	se.	34	e.	15	15	10	6	4.3	.0	.0	6
Fort Smith [1]	463	57	82	999.0	1,014.6	.0	86.4	+5.9	108	9	100	69	23	73	36	0	67	62	1.38	−1.9	.58	7	6.3	ne.	32	ne.	11	12	14	5	4.4	.0	.0	8
Little Rock [1]	357	26	58	1,003.7	1,016.6	+1.0	85.0	+5.2	103	7	96	71	17	74	29	0	70	70	1.09	−2.7	.77	6	6.5	sw.	26	s.	14	17	11	3	3.8	.0	.0	3
Austin [1]	605	10	41	993.9	1,015.2	+1.0	83.3	−.5	104	10	94	70	22	73	32	0	70	74	2.12	+.1	.68	7	7.9	s.	37	sw.	10	8	16	7	5.3	.0	.0	7
Brownsville [1]	57	5	54	1,011.5	1,013.5	+.3	83.4	−.5	97	28	93	71	21	74	23	0	74	82	6.93	+4.1	3.01	13	9.1	se.	34	se.	4	5	16	10	6.0	.0	.0	9
Corpus Christi [1]	20	4	33	1,014.2	1,014.9	+.3	82.6	+1.0	95	24	91	71	2	74	23	0	74	83	5.05	------	2.90	10	9.4	se.	34	se.	3	11	14	6	4.9	.0	.0	9
Dallas [1]	512	5	45	997.0	1,014.9	+.3	86.4	+2.9	109	9	97	67	11	76	31	0	68	60	10.81	+8.0	9.18	7	8.8	s.	34	nw.	11	17	12	2	3.6	.0	.0	5
Fort Worth [1]	679	40	56	991.2	1,014.6	+.7	86.2	+3.5	106	10	96	72	26	76	25	0	66	58	4.18	+1.6	3.83	3	10.1	s.	26	se.	26	14	14	3	4.2	.0	.0	2
Galveston [2]	54	106	114	1,013.5	1,015.6	+.4	82.8	−.2	95	31	88	72	21	78	17	0	76	83	4.85	+.6	2.24	12	12.2	s.	66	e.	24	8	13	10	5.7	.0	.0	9
Houston [2]	138	157	190	1,010.5	1,015.2	.0	83.8	+.6	103	9	92	71	18	75	27	0	74	82	4.52	+.4	2.00	8	9.3	se.	43	ne.	10	8	9	14	6.2	.0	.0	8
Palestine	510	64	72	998.3	1,015.9	+.7	83.6	+1.8	104	9	94	70	18	74	25	0	68	65	1.13	−1.0	.90	4	6.5	s.	25	se.	11	11	16	4	4.4	.0	.0	5
Port Arthur [2]	34	59	134	1,014.2	1,015.6	+.4	83.5	+.3	102	9	91	71	11	76	23	0	74	84	6.74	+.7	2.66	15	11.7	s.	40	se.	11	5	11	15	6.1	.0	.0	17
San Antonio [1]	693	8	51	990.9	1,015.2	+1.3	83.3	−.2	104	10	95	69	26	72	32	0	70	75	5.34	+2.9	2.25	14	7.7	s.	40	s.	2	6	16	9	5.9	.0	.0	13

See footnotes at end of table.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR AUGUST 1947—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station	Pressure: Sea level	Pressure: Departure from normal	Temperature of the air: Mean	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Total degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	Precipitation: Days with 0.01 inch or more	Wind: Average hourly velocity	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms
OHIO VALLEY AND TENNESSEE	Ft.	Ft.	Ft.	Mb.	Mb.	Mb.	°F.	°F.	°F.		°F.	°F.		°F.	°F.		°F.	%	In.	In.	In.		Mi.								0–10	In.	In.	
							79.7	+5.5										81	3.10	−.6											5.5			
Chattanooga [1]	762	6	66	990.9	1,017.3	+.7	81.4	+5.7	105	4	93	66	20	70	32	0	70	80	1.10	−2.9	.37	7	5.6	s.	33	nw.	8	0	19	12	6.6	.0	.0	15
Knoxville [1]	995	27	53	983.4	1,018.3	+1.4	79.2	+3.8	93	17	90	65	31	69	27	0	70	82	2.11	−1.8	.44	14	5.0	ne.	47	nw.	2	1	17	13	7.0	.0	.0	17
Memphis [1]	399	5	85	1,002.4	1,016.3	+.4	84.8	+6.4	103	4	97	70	26	73	29	0	70	74	2.42	−.9	1.49	6	6.3	sw.	34	nw.	7	15	12	4	4.0	.0	.0	11
Nashville [1]	546	5	72	998.0	1,017.3	+.7	82.4	+4.6	102	5	94	66	30	71	30	0	70	76	3.05	−.7	.90	11	5.9	s.	34	se.	10	9	18	4	4.9	.0	.0	12
Lexington [1]	989	4	28	982.4	1,017.6	+1.3	79.0	+4.5	96	30	89	64	30	69	32	0	71	86	2.88	−.6	1.39	10	---	s.	---	---	---	---	5	21	5	5.7	.0	.0	14
Louisville [1]	525	106	120	998.3	1,016.9	+.3	81.0	+4.9	100	5	91	63	1	71	31	0	71	78	1.75	−1.7	.84	7	5.1	s.	31	n.	2	9	14	8	5.2	.0	.0	11
Evansville [1]	431	11	40	1,001.7	1,016.9	+.6	81.1	+6.1	100	6	92	60	1	70	27	0	72	82	2.26	−1.1	.93	6	5.1	s.	34	nw.	7	8	19	4	4.8	.0	.0	7
Indianapolis [1]	823	5	54	987.5	1,016.6	.0	79.0	+6.6	97	6	89	56	1	69	27	0	70	80	5.22	------	1.77	9	6.5	sw.	43	w.	14	13	11	7	4.6	.0	.0	10
Terre Haute [2]	575	68	149	996.6	1,016.9	+1.0	81.0	+6.2	102	5	93	51	1	70	36	0	72	78	2.47	−.8	1.28	6	6.3	s.	27	nw.	14	11	13	7	4.5	.0	.0	11
Cincinnati [2]	627	11	51	995.3	1,017.6	+1.0	81.4	+7.8	101	6	91	60	1	72	28	0	70	80	2.15	−1.3	1.40	6	3.5	se.	19	nw.	25	8	14	9	5.4	.0	.0	13
Columbus [2]	822	90	110	988.5	1,017.6	+1.0	79.4	+6.4	96	4	88	54	1	70	25	0	70	83	3.64	+.4	1.02	12	6.3	s.	25	sw.	5	8	16	7	5.4	.0	.0	7
Dayton [1]	1,003	6	55	982.1	1,017.6	+1.3	78.3	+5.4	95	5	88	54	1	69	27	0	68	80	4.85	+1.6	1.82	11	5.7	s.	45	sw.	14	10	15	6	5.1	.0	.0	12
Elkins [1]	1,947	4	45	951.2	1,019.0	+1.4	72.2	+3.9	88	13	83	48	2	61	33	5	66	91	2.18	−1.7	.58	10	4.0	se.	31	nw.	9	2	15	14	6.9	.0	.0	18
Parkersburg	637	77	84	994.9	1,017.6	+.3	78.7	+4.8	95	11	89	56	1	69	28	0	70	82	9.03	+5.5	3.07	10	4.3	se.	26	nw.	26	6	13	12	6.3	.0	.0	10
Pittsburgh [1]	842	39	54	987.8	1,017.6	+1.0	76.6	+5.3	93	13	86	53	1	67	25	1	66	78	1.42	−1.8	.61	11	6.7	s.	26	nw.	26	2	13	16	6.8	.0	.0	14
LOWER LAKES							75.8	+6.7										78	2.92	−.1											4.8			
Buffalo [1]	768	34	96	990.2	1,017.6	+1.7	75.2	+6.8	94	6	86	47	1	65	33	5	66	78	1.80	−1.3	.65	7	9.5	sw.	36	sw.	30	15	7	9	4.7	.0	.0	5
Canton	448	10	61	1,011.7	1,017.3	+2.4	71.6	+5.1	92	13	82	43	1	61	33	27	62	75	1.55	−2.1	.78	7	6.0	sw.	21	sw.	30	12	12	7	4.8	.0	.0	5
Oswego	335	71	85	1,005.4	1,017.6	+1.7	73.4	+5.6	95	13	81	50	2	66	26	10	66	78	1.50	−1.1	.69	6	6.7	se.	22	n.	31	17	6	8	4.5	.0	.0	4
Rochester [1]	523	5	69	999.3	1,018.0	+1.7	75.0	+7.1	96	13	86	47	2	64	36	8	66	80	2.42	−.5	.99	7	6.3	sw.	29	sw.	30	13	8	10	5.2	.0	.0	8
Syracuse [1]	596	5	57	996.6	1,018.3	+1.7	74.2	+6.9	96	13	85	45	2	64	34	12	66	80	3.70	+.8	1.98	8	5.9	sw.	25	sw.	14	7	14	10	5.6	.0	.0	7
Erie [2]	714	57	81	991.9	1,017.6	+1.3	76.4	+6.8	94	7	83	55	2	69	24	3	67	83	2.06	−1.2	1.06	6	6.1	se.	17	sw.	30	18	6	7	4.3	.0	.0	5
Cleveland [1]	762	27	54	990.2	1,017.6	+1.0	77.8	+7.6	99	19	88	52	2	67	29	1	68	80	5.19	+2.4	3.07	10	6.8	s.	40	nw.	30	8	17	6	5.2	.0	.0	9
Sandusky	629	5	67	994.9	1,017.6	+1.3	77.8	+6.0	97	6	86	57	1	70	28	2	---	---	4.57	+1.4	1.54	7	6.2	ne.	22	nw.	28	14	13	4	4.4	.0	.0	6
Toledo [1]	628	5	47	994.6	1,017.3	+.7	77.2	+7.0	98	6	88	48	1	66	33	5	67	79	4.13	+1.3	1.48	11	7.0	sw.	34	n.	28	12	14	5	4.8	.0	.0	13
Fort Wayne [1]	857	5	33	986.5	1,016.9	+.3	78.7	+7.8	100	6	90	52	1	68	29	1	67	74	2.38	−.7	1.48	6	5.7	s.	33	w.	14	14	11	6	4.7	.0	.0	10
Detroit [1]	730	5	78	991.9	1,018.0	+1.4	76.6	+7.4	97	6	86	48	1	67	27	5	66	76	2.85	+.1	1.35	11	6.4	n.	26	nw.	14	9	15	7	5.1	.0	.0	12
UPPER LAKES							+73.4	7.3										76	2.82	−.1											4.4			
Alpena	609	5	89	995.3	1,018.0	+1.4	71.3	+7.2	98	18	80	43	1	62	27	24	62	78	1.28	−1.6	.53	8	8.4	se.	27	se.	17	12	15	4	4.2	.0	.0	5
Escanaba	612	51	72	994.6	1,016.9	+1.0	70.0	+5.7	89	24	77	46	1	63	25	25	63	80	3.01	−.2	1.28	9	9.0	s.	24	n.	25	15	11	5	4.1	.0	.0	7
Grand Rapids [2]	707	70	244	991.5	1,016.9	+.6	79.1	+9.4	101	5	90	50	1	68	31	2	64	70	2.20	−.4	1.53	6	8.1	s.	27	sw.	30	13	15	3	4.0	.0	.0	7
Lansing [2]	878	5	90	986.1	1,017.3	+1.0	75.2	+6.7	95	18	85	47	1	65	27	6	64	74	3.86	+1.0	1.35	12	5.4	s.	23	n.	28	7	19	5	5.2	.0	.0	13
Marquette	734	44	73	989.2	1,015.9	.0	70.9	+7.1	102	5	81	46	29	61	37	35	62	78	3.38	+.7	1.36	9	8.1	s.	25	sw.	10	12	12	7	4.6	.0	.0	10
Sault Saint Marie [1]	614	11	52	994.9	1,017.3	+1.4	69.8	+9.0	98	6	82	36	1	57	36	36	60	81	.50	−2.2	.11	10	9.3	e.	31	sw.	13	11	15	5	4.7	.0	.0	6
Chicago [1]	673	5	36	992.6	1,016.6	+.3	80.2	+8.6	101	6	91	52	1	70	30	0	67	74	3.16	+.1	1.20	6	6.6	s.	25	n.	29	18	10	3	3.8	.0	.0	8
Green Bay	617	5	32	994.2	1,016.6	+1.0	75.0	+7.3	99	6	86	46	1	64	35	7	63	72	4.66	+1.5	2.34	12	6.8	s.	23	nw.	18	15	11	5	4.1	.0	.0	11
Milwaukee [1]	681	33	66	992.2	1,016.6	+.3	75.8	+8.2	99	4	85	49	1	66	35	7	66	76	1.58	−1.1	1.04	6	9.4	sw.	29	n.	24	15	10	6	4.1	.0	.0	7
Duluth [2]	1,133	5	47	974.3	1,015.2	.0	66.8	+4.2	94	11	75	48	28	58	32	56	60	82	4.62	+1.4	1.68	10	9.5	ne.	40	w.	17	9	12	10	5.5	.0	.0	10
NORTH DAKOTA							71.8	+6.2										66	2.87	+.7											4.2			
Fargo [1]	940	6	47	978.3	1,011.9	−2.3	73.9	+7.8	105	4	86	46	28	61	34	18	58	64	2.49	−.4	.69	12	12.9	s.	34	e.	7	14	15	2	4.3	.0	.0	9
Bismarck [1]	1,677	5	43	952.3	1,011.2	−3.0	72.8	+6.1	105	21	87	43	25	59	41	26	56	65	1.13	−.7	.39	8	11.0	se.	34	nw.	5	15	13	3	3.8	.0	.0	8
Devils Lake	1,478	11	44	959.7	1,012.2	−1.7	71.4	+6.6	103	4	84	43	27	59	36	32	56	64	2.66	+.2	.77	13	8.1	se.	26	n.	5	12	13	4	4.6	.0	.0	12
Grand Forks [1]	832	4	41	982.4	1,012.5	−1.4	70.6	------	102	4	83	44	28	58	33	34	60	72	3.03	------	.69	11	---	se.	---	---	---	---	10	14	7	---	.0	.0	13
Williston	1,878	42	50	945.1	1,010.5	−2.7	70.4	+4.3	99	3	82	46	25	59	35	29	56	66	5.06	+3.6	1.53	13	7.0	se.	41	w.	5	13	15	3	3.9	.0	.0	14
UPPER MISSISSIPPI							81.3	+8.8										69	1.79	−1.5											3.7			
Minneapolis-St. Paul [1]	919	43	74	981.0	1,013.5	−1.1	78.2	+8.3	102	4	89	52	26	68	31	2	64	67	2.41	−.7	.87	10	10.3	se.	35	ne.	31	17	8	6	3.9	.0	.0	10
La Crosse [1]	714	5	29	989.5	1,014.9	−.3	77.5	+8.1	100	18	88	50	26	66	31	6	66	74	2.25	−1.5	1.28	7	7.9	s.	25	s.	17	17	10	4	3.6	.0	.0	14
Madison [1]	974	70	78	981.7	1,016.3	+.7	77.8	+8.3	101	22	90	47	1	65	39	4	66	73	2.58	−.6	1.18	7	7.4	s.	33	n.	24	16	9	6	4.1	.0	.0	12
Charles City	1,015	10	51	979.7	1,015.6	−.3	78.7	+9.6	100	3	91	52	26	67	34	1	---	---	2.52	−1.0	2.51	3	6.0	s.	18	s.	5	17	11	3	3.1	.0	.0	7
Moline [1]	606	6	50	994.2	1,016.3	+.4	81.0	+9.3	100	4	92	55	1	70	29	0	68	69	.52	−3.0	.42	5	6.4	e.	26	nw.	29	20	8	3	3.2	.0	.0	6
Des Moines [2]	860	5	99	------	1,014.9	.0	82.7	+9.6	102	3	94	60	26	72	31	0	65	62	1.18	−2.3	1.00	5	8.3	se.	38	sw.	25	15	11	5	4.1	.0	.0	4
Dubuque	699	60	79	990.9	1,015.6	−.3	80.6	+8.9	99	4	91	57	1	70	28	0	68	71	2.60	−.6	2.22	4	4.4	s.	17	ne.	28	16	13	2	3.6	.0	.0	7
Burlington [1]	702	4	36	990.9	1,015.9	+.7	82.4	+8.4	103	24	95	56	1	70	35	0	69	72	1.86	−1.7	.84	7	7.5	s.	54	n.	30	17	11	3	3.6	.0	.0	6
Cairo	357	5	99	1,004.1	1,016.6	+1.0	84.8	+6.0	103	5	94	72	27	75	25	0	---	---	.87	−2.2	.46	5	5.5	sw.	22	se.	6	12	13	6	4.5	.0	.0	8
Peoria [1]	609	6	26	994.6	1,016.3	−.3	82.0	+10.5	101	2	94	54	1	70	30	0	68	68	1.33	−1.8	.95	6	6.9	sw.	26	ne.	24	13	14	4	4.0	.0	.0	6
Springfield, Ill. [2]	636	5	191	993.6	1,016.3	+.4	84.4	+9.9	102	3	95	57	1	74	30	0	69	72	1.85	−1.3	1.43	2	8.7	s.	29	n.	24	18	11	2	3.3	.0	.0	4
St. Louis [2]	568	35	303	996.3	1,015.9	+.3	85.6	+8.1	102	24	95	64	1	76	27	0	---	61	1.55	−1.4	.95	6	8.9	sw.	26	w.	14	20	7	4	---	.0	.0	7
MISSOURI VALLEY							82.8	+8.9										62	1.83	−1.5											3.4			
Columbia, Mo. [2]	784	6	66	988.2	1,015.9	+2.0	85.0	+8.7	104	30	96	68	1	74	29	0	68	66	1.20	−2.4	.42	6	5.3	s.	17	s.	7	23	7	1	2.9	.0	.0	4
Kansas City [1]	963	39	76	988.2	1,014.6	.0	86.2	+9.6	106	9	97	70	26	76	33	0	67	58	4.35	+.8	2.73	5	9.4	sw.	29	w.	6	21	6	4	3.3	.0	.0	5
St. Joseph [1]	967	11	49	980.4	1,013.9	−.3	84.4	+7.9	105	9	96	65	15	73	32	0	68	65	.76	−3.1	.34	5	6.6	s.	20	nw.	25	25	2	4	2.6	.0	.0	4
Springfield, Mo. [1]	1,324	5	67	971.6	1,015.9	+.3	82.4	------	102	31	95	66	29	70	31	0	67	65	.88	−3.2	.74	9	8.8	s.	49	w.	6	18	9	4	3.1	.0	.0	8
Topeka [2]	987	65	87	979.7	1,014.6	+1.4	85.8	+9.6	107	30	98	68	26	74	34	0	68	66	6.39	+2.3	4.54	4	7.7	s.	25	sw.	5	22	5	4	3.5	.0	.0	5
Lincoln [2]	1,189	11	81	971.2	1,012.9	−1.0	84.5	+10.1	106	9	96	58	26	73	34	0	64	60	2.13	−1.4	1.15	3	9.2	s.	25	s.	5	20	8	3	3.1	.0	.0	2
Omaha [1]	1,105	5	68	974.9	1,013.5	−1.1	83.2	+10.0	102	2	94	58	26	72	29	0	66	64	1.06	−2.0	.60	6	10.8	s.	30	se.	31	20	9	2	3.2	.0	.0	7
Valentine	2,598	46	54	923.1	1,012.9	−1.7	78.5	+6.8	108	9	92	53	14	65	43	0	55	52	.06	−2.1	.05	3	9.8	s.	34	nw.	2	19	5	7	3.9	.0	.0	5
Sioux City [1]	1,138	5	40	973.9	1,012.9	−1 3	80.8	+9.7	104	3	94	49	26	68	35	0	65	62	.63	−2.5	.20	7	9.5	s.	25	sw.	4	19	5	7	4.0	.0	.0	10
Huron [1]	1,301	5	41	966.1	1,011.9	−2.3	77.4	+8.0	109	9	92	49	14	63	38	5	60	64	.83	−1.6	.33	9	12.5	se.	34	s.	22	17	8	6	3.9	.0	.0	8
NORTHERN SLOPE							70.1	+3.1										54	1.29	+.1											4.4			
Billings [1]	3,570	16	40	890.3	1,011.2	−3.0	71.8	+1.2	100	8	87	47	11	57	40	14	50	54	1.04	------	.39	8	9.9	sw.	51	nw.	12	16	12	3	4.0	.0	.0	10
Havre	2,507	11	67	924.8	1,012.5	−1.4	68.1	+2.7	101	8	82	43	24	54	43	38	46	56	1.41	+.2	.74	8	8.0	sw.	43	sw.	4	7	12	12	5.8	.0	.0	7
Helena [1]	4,124	5	43	873.0	1,012.5	−1.7	65.4	+.8	97	8	82	40	13	49	49	54	42	52	.50	−.3	.32	5	7.9	w.	49	s.	21	11	17	3	4.6	.0	.0	17
Missoula [1]	3,205	4	32	900.8	1,013.5	−.7	65.0	+.8	92	2	82	39	10	48	47	70	43	54	2.18	+1.4	1.43	6	6.8	nw.	33	nw.	9	14	12	5	4.2	.0	.0	9
Kalispell	2,973	48	56	910.6	1,012.2	−1.7	62.4	−.4	85	1	76	37	10	49	40	113	46	62	3.28	+2.4	2.08	9	5.7	w.	18	n.	7	10	14	7	5.2	.0	.0	9
Miles City [1]	2,371	5	78	928.5	1,010.8	−3.1	75.1	------	106	3	91	45	25	59	44	7	51	52	1.83	------	.77	8	---	nw.	---	---	---	---	20	10	1	3.3	.0	.0	12
Rapid City [1]	3,259	5	63	900.4	1,011.2	−3.4	75.3	+5.8	106	9	91	40	25	60	45	4	52	52	.46	−1.2	.16	7	13.0	s.	49	nw.	12	18	11	2	3.6	.0	.0	10
Cheyenne [1]	6,004	5	40	816.5	1,014.2	−.4	68.6	+3.0	93	1	83	46	13	54	38	25	48	56	1.37	−.2	.31	12	8.2	nw.	28	nw.	4	8	14	9	5.5	.0	.0	11
Lander [1]	5,352	60	68	837.1	1,013.5	−.4	68.4	+2.9	93	7	84	44	25	52	40	21	43	46	.54	+.1	.33	4	7.7	sw.	32	w.	9	15	9	7	4.1	.0	.0	5
Sheridan [1]	3,790	5	38	883.5	1,011.9	−4.0	72.3	+5.8	100	8	90	45	13	54	45	12	46	49	.52	−.4	.45	5	7.4	nw.	56	nw.	12	17	13	1	3.4	.0	.0	10
North Platte [2]	2,821	11	51	915.7	1,012.2	−2.0	79.2	+8.4	102	9	92	56	26	66	36	0	60	61	1.05	−1.3	.74	4	7.0	s.	24	s.	22	14	10	7	4.4	.0	.0	7

See footnotes at end of table.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR AUGUST 1947—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station	Pressure: Sea level	Pressure: Departure from normal	Temperature of the air: Mean	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Total degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	Precipitation: Days with 0.01 inch or more	Wind: Average hourly velocity	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month	Number of days with thunderstorms
MIDDLE SLOPE	Ft.	Ft.	Ft.	Mb.	Mb.	Mb.	°F.	°F.	°F.		°F.	°F.		°F.	°F.		°F.	%	In.	In.	In.		Mi.								0-10	In.	s.	
Denver [2]	5,292	106	113	840.2	1,013.5	−1.1	74.1	+3.4	96	9	86	55	25	62	32	3	50	56	1.16	−.3	.41	11	6.9	s.	27	nw.	12	8	17	6	5.4	.0	.0	9
Pueblo [1]	4,690	5	36	858.5	1,012.9	−.6	74.6	+1.9	99	10	90	52	27	60	39	0	52	56	1.04	−.8	.40	6	6.8	nw.	33	nw.	4	9	18	4	4.7	.0	.0	8
Concordia	1,392	50	58	964.8	1,012.9	−1.0	84.8	+8.3	105	9	96	63	26	74	35	0	62	53	.30	−2.6	.17	4	8.5	s.	21	sw.	4	24	3	4	3.1	.0	.0	2
Dodge City [1]	2,509	5	58	927.5	1,012.9	−1.0	81.8	+4.1	103	31	94	64	26	69	33	0	62	59	1.15	−1.5	.57	6	14.7	s.	36	s.	5	20	7	4	3.4	.0	.0	7
Wichita [1]	1,358	6	64	966.8	1,013.5	0.0	85.0	+6.7	105	9	97	68	26	73	31	0	63	56	.82	−2.3	.57	5	12.7	s.	34	s.	5	19	8	4	3.5	.0	.0	5
Oklahoma City [1]	1,214	10	47	972.2	1,014.6	+.7	85.6	+5.9	106	10	97	69	12	74	30	0	66	63	1.19	1.7	1.13	4	7.7	s.	20	s.	14	19	10	2	3.2	.0	.0	1
Tulsa [1]	674	10	60	990.9	1,014.6	-----	85.9	+5.8	114	30	98	69	12	73	39	0	68	62	.43	−2.8	.32	4	8.7	sw.	23	sw.	13	14	14	3	4.3	.0	.0	4
SOUTHERN SLOPE							80.8	+1.9										59	1.50	−.8											4.8			
Abilene [1]	1,738	4	59	954.6	1,013.9	+.7	84.0	+3.7	104	10	96	67	21	72	29	0	62	56	.48	−1.8	.20	5	12.1	s.	34	s.	11	6	20	5	5.1	.0	.0	5
Amarillo [1]	3,676	5	42	891.4	1,013.5	−.4	79.0	+4.4	99	11	93	58	27	65	35	0	56	52	.39	−2.7	.15	6	13.3	s.	34	sw.	5	14	10	7	4.4	.0	.0	6
Del Rio	960	63	71	980.7	1,013.2	+1.0	82.4	−1.8	97	10	91	70	11	74	26	0	70	72	3.58	+1.9	2.23	8	8.6	se.	30	se.	1	7	13	11	5.7	.0	.0	7
Roswell	3,566	75	85	894.7	1,014.2	+1.3	77.8	+1.2	101	11	92	59	19	64	40	0	56	57	1.55	−.6	.90	6	7.9	se.	31	nw.	13	16	9	6	4.0	.0	.0	11
SOUTHERN PLATEAU							80.3	+.6										52	1.89	+.3											5.0			
El Paso [1]	3,778	29	85	886.6	1,010.8	−.4	80.0	+2.0	99	11	91	63	17	69	28	0	57	50	1.63	−.1	.47	8	9.5	se.	34	e.	19	13	10	8	4.8	.0	.0	14
Albuquerque [1]	5,314	5	45	840.5	1,011.9	+1.1	76.0	+2.1	96	7	88	57	25	64	31	0	52	52	1.45	+.2	.38	10	7.4	sw.	47	se.	11	7	19	5	5.2	.0	.0	15
Flagstaff	6,907	36	51	794.8	-----	-----	63.9	+.1	87	1	79	40	23	49	40	59	48	66	4.23	+1.5	.73	16	----	nw.	----	----	----	2	21	8	6.5	.0	.0	15
Phoenix [2]	1,107	39	87	970.9	1,008.5	−.3	88.4	−.1	110	6	101	71	18	76	34	0	62	48	1.21	+.3	.46	9	6.8	w.	34	se.	8	12	14	5	4.5	.0	.0	7
Tucson [1]	2,555	5	39	924.5	1,010.5	+2.0	83.7	−.5	105	6	96	66	9	72	31	0	61	54	2.24	−.1	.72	12	----	nw.	----	----	----	8	12	11	5.8	.0	.0	13
Yuma	142	9	54	1,003.1	1,007.8	−.3	89.9	−.5	113	6	104	64	29	76	42	0	60	45	.57	+.1	.29	3	5.1	s.	26	ne.	6	20	8	3	3.0	.0	.0	5
MIDDLE PLATEAU							73.6	−.1										41	.82	+1.1											3.4			
Reno [1]	4,527	20	52	861.5	1,012.5	.0	66.1	+.4	95	18	87	33	22	45	51	42	36	45	.12	−.1	.10	2	7.6	s.	32	se.	13	22	6	0	1.9	.0	.0	5
Winnemucca	4,339	5	56	866.6	1,011.2	−2.0	68.6	−.7	96	18	89	37	30	48	51	31	32	29	.01	−.2	.01	1	7.6	sw.	26	sw.	9	25	6	0	2.0	.0	.0	2
Modena	5,473	10	46	835.1	1,011.5	−.7	85.2	−.3	93	6	85	40	31	53	49	19	43	37	1.32	.0	.98	5	10.2	sw.	36	sw.	21	17	13	1	3.4	.0	.0	7
Salt Lake City [1]	4,227	32	58	866.9	1,011.5	−.7	74.1	+1.3	96	6	88	46	23	61	38	1	48	46	1.38	+.5	.81	9	11.9	se.	38	nw.	10	15	10	6	4.0	.0	.0	11
Grand Junction [1]	4,602	60	68	861.2	1,013.5	.0	74.0	−1.4	99	2	87	52	25	61	34	0	51	50	1.27	+.1	.59	11	8.7	e.	34	nw.	10	7	16	8	5.8	.0	.0	15
NORTHERN PLATEAU							68.8	−.3										44	.30	−.1											3.3			
Baker [2]	3,471	36	54	894.3	1,013.2	−2.0	64.5	−.1	94	2	82	39	24	47	46	74	38	51	.05	−.4	.05	1	6.0	n.	23	sw.	29	20	10	1	3.1	.0	.0	1
Boise [1]	2,739	5	49	916.4	1,010.2	−2.7	72.3	+1.3	103	2	88	49	10	57	44	10	36	32	.05	−.1	.05	1	9.6	nw.	42	se.	2	24	5	2	2.8	.0	.0	0
Pocatello [1]	4,478	5	31	862.9	1,012.2	−.7	70.2	+1.3	96	6	86	37	23	54	46	28	40	37	.59	+.1	.22	8	11.3	s.	38	sw.	15	17	11	3	3.5	.0	.0	11
Spokane [1]	1,929	27	42	944.8	1,012.5	−1.4	66.7	−1.4	94	2	81	46	10	52	41	36	44	49	.83	+.2	.35	8	6.4	ne.	34	sw.	3	13	9	9	4.7	.0	.0	5
Walla Walla	991	57	65	977.3	1,012.5	−1.0	72.0	−.7	97	2	84	52	19	60	39	3	----	----	.12	−.4	.10	3	5.6	w.	22	sw.	29	25	2	4	2.5	.0	.0	1
Yakima [1]	1,076	58	67	974.3	1,012.5	−1.7	67.2	−2.0	97	2	86	38	19	49	46	28	44	52	.13	−.2	.07	3	----	nw.	----	----	----	20	6	5	3.4	.0	.0	2
NORTH PACIFIC COAST							63.2	−.6										73	.69	−.1											5.2			
North Head	211	5	55	1,009.8	1,017.3	−1.0	59.5	+1.9	68	8	64	51	20	55	14	172	54	84	1.95	+.9	1.34	10	11.6	n.	31	n.	12	6	10	15	6.5	.0	.0	0
Seattle [2]	125	90	321	1,011.9	1,016.3	−1.0	64.2	−.9	82	25	73	49	21	55	27	49	52	69	.54	−.2	.52	4	6.5	w.	23	sw.	7	11	8	12	5.4	.0	.0	1
Tacoma	194	172	201	1,009.5	1,016.3	−1.0	63.0	+.4	79	14	72	49	20	54	27	70	----	----	.16	−.6	.07	6	7.2	n.	24	sw.	7	8	19	4	4.8	.0	.0	1
Tatoosh Island	86	9	61	1,013.9	1,016.9	−1.1	56.2	+.9	67	2	60	46	20	52	14	275	54	94	.66	−1.4	.44	6	9.1	s.	33	s.	3	4	10	17	6.7	.0	.0	0
Medford [1]	1,329	29	58	967.2	1,013.9	.0	67.6	−3.5	94	17	84	44	21	52	44	29	49	58	.30	+.1	.18	2	----	nw.	----	----	----	17	11	3	3.2	.0	.0	2
Portland, Oreg. [2]	154	68	106	1,010.5	1,016.3	−.3	66.3	−.4	87	25	76	48	20	57	27	29	52	67	.27	−.4	.14	6	5.3	nw.	24	w.	3	9	13	9	5.4	.0	.0	2
Roseburg	510	45	76	997.6	1,015.9	.0	65.3	−2.7	88	14	78	44	21	53	35	36	52	68	.94	+.6	.74	4	4.2	n.	15	sw.	29	13	14	4	4.1	.0	.0	2
MIDDLE PACIFIC COAST							67.4	+.5										64	.03	0											3.3			
Eureka	60	72	88	1,014.6	1,016.9	−.4	58.2	+2.2	68	3	63	46	19	54	15	206	54	85	.10	−.1	.08	2	6.1	n.	18	sw.	25	6	12	13	6.3	.0	.0	1
Red Bluff	353	5	26	999.0	1,011.5	-----	77.2	−2.5	102	18	92	54	22	62	37	0	44	37	.02	.0	.02	1	6.8	se.	28	se.	8	24	6	1	2.1	.0	.0	3
Sacramento [2]	66	92	115	1,009.8	1,012.2	+.3	72.6	−.3	100	5	87	55	26	58	40	0	51	56	.00	.0	.00	0	7.9	s.	19	sw.	6	30	1	0	.6	.0	.0	0
San Francisco [2]	155	112	132	1,008.8	1,014.6	−.4	61.8	+2.7	83	31	68	52	11	56	26	114	54	78	T	.0	T	0	10.5	w.	31	w.	21	12	15	4	4.1	.0	.0	0
SOUTH PACIFIC COAST							73.3	−.1										61	0	.0											2.5			
Fresno [1]	327	5	34	999.7	1,011.2	+.4	77.6	−1.9	107	5	95	52	22	60	41	0	50	44	T	.0	T	0	7.1	nw.	22	nw.	20	29	2	0	1.4	.0	.0	0
Los Angeles	338	223	250	1,001.0	1,013.2	+.3	71.4	+.3	92	31	81	26	29	62	27	0	57	68	.01	.0	.01	1	5.8	w.	21	w.	29	23	6	2	2.1	.0	.0	1
San Diego [1]	87	20	55	1,009.8	1,013.2	+.3	71.0	+1.2	87	9	78	58	30	64	22	0	60	72	.00	.0	.00	0	6.7	nw.	17	nw.	28	14	12	5	4.1	.0	.0	0
WEST INDIES																																		
San Juan, P. R.	82	10	54	1,013.2	1,015.9	-----	80.5	.0	88	14	84	74	9	76	12	0	75	82	7.60	+1.6	2.37	15	11.5	e.	31	ne.	12	3	22	6	5.7	.0	.0	10
PANAMA CANAL																																		
Balboa Heights	118	6	97	-----	1,010.6	-----	80.8	+.5	92	30	88	72	10	74	18	0	75	88	5.83	−1.9	1.53	21	5.3	nw.	24	n.	22	0	13	18	8.1	.0	.0	11
Cristobal	23	37	92	-----	1,010.5	-----	80.0	−.7	86	10	84	70	8	76	14	0	76	88	17.10	+1.7	5.92	24	7.4	ne.	27	n.	4	0	6	25	8.5	.0	.0	11
ALASKA																																		
Anchorage [1]	132	6	44	1,010.2	1,014.9	-----	55.2	−.4	76	8	66	32	17	44	33	305	46	70	2.59	.0	1.33	13	6.0	n.	30	s.	15	6	9	16	6.8	.0	.0	0
Fairbanks [1]	455	5	63	997.6	1,014.9	-----	50.9	−4.1	76	25	62	23	30	39	39	435	42	72	1.58	−.6	.63	15	7.2	sw.	26	sw.	16	3	11	17	7.1	.0	.0	0
Juneau [1]	80	6	30	1,012.9	1,015.9	-----	54.0	−.5	73	8	62	34	19	46	33	341	46	76	8.47	+3.2	2.38	15	7.6	se.	32	se.	31	1	9	21	8.1	.0	.0	0
Nome	22	10	75	1,013.9	1,014.6	-----	47.4	−2.1	65	6	54	32	29	40	26	551	44	86	3.10	−.1	1.56	10	11.8	sw.	47	se.	17	2	10	19	7.5	T	.0	0
Barrow	29	5	27	1,012.5	1,013.2	-----	37.4	−.8	60	25	42	25	18	33	26	855	36	92	.46	−.3	.21	6	11.4	w.	35	nw.	16	1	1	29	9.0	T	.0	0
Bethel	28	5	31	-----	-----	-----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Cordova	45	5	32	1,012.5	1,014.6	-----	52.7	----	75	7	63	36	18	42	33	380	47	82	9.24	----	3.40	18	----	e.	20	e.	31	5	10	16	6.9	.0	.0	0
Gambell	32	5	32	1,013.2	1,014.2	-----	43.7	−2.1	56	5	47	34	31	41	16	660	42	94	2.32	+.2	----	16	13.0	sw.	38	se.	6	0	3	28	9.0	.0	.0	0
Ketchikan	25	69	90	1,015.9	1,016.9	-----	58.2	−.2	71	22	64	44	19	52	21	214	50	80	13.37	+2.0	4.58	15	6.5	se.	20	nw.	19	3	4	24	7.9	.0	.0	0
Kotzebue	20	5	31	1,013.2	1,013.9	-----	49.2	−.8	67	25	54	39	16	45	23	491	44	83	1.98	+.4	----	18	13.2	nw.	36	se.	18	1	6	24	8.2	.0	.0	0
McGrath	341	5	31	1,002.7	1,015.6	-----	51.8	−1.5	77	7	61	29	30	43	36	407	44	76	2.11	−1.4	.97	16	----	w.	28	s.	18	4	3	24	7.7	.0	.0	0
Northway	1718	5	32	952.9	1,015.9	-----	50.0	−2.7	71	11	60	32	18	40	31	463	41	72	1.65	−.9	.36	19	6.1	w.	22	-----	3	1	4	26	8.2	.0	.0	0
HAWAII																																		
Honolulu	38	86	100	1,015.5	1,016.6	-----	78.8	+.4	85	2	83	72	2	74	13	0	68	69	.90	−.4	.23	16	----	e.	23	ne.	27	8	16	7	5.6	.0	.0	1

[1] Data are airport records.
[2] Barometric data (adjusted to old city elevation) and hygrometric data from airport; otherwise city office records.
[3] Observations taken hourly.
[4] Pressure (adjusted to old city elevation), temperature, and hygrometric data from airport; otherwise city office records.
[5] Temperature and precipitation from city records; other data from airport.

NOTE.—Except as indicated by notes [1], [2], [4], and [5] data in table are city office records.

SEVERE LOCAL STORMS FOR AUGUST 1947

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the United States Yearbook]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Flathead Co., near Somers and Bigford, Mont.	1	3:30 p. m.	1 3–10		$1,000,000	Severe hail	Stones ¼–1-inch in diameter. Storm moved from west to east, destroying from 20–60 percent of crops, including peas, wheat, barley, and hay. Length of path, 15 miles.
Douglas, Wyo.	1	P. m.		1	0	Thunderstorm	Man killed by lightning about 30 miles east of Douglas.
Sheridan Co., Nebr.	1	11:30 p. m.	1 10		17,000	Thunderstorm with wind squall.	From near Gordon to 10 miles west. Circus tent torn down, with circus losses of about $15,000. Airplanes on municipal field damaged, about $2,000.
Ottertail, Wadena and Cass Cos., Minn.	2	1:40 a. m.	1 5		50,000	Hail	Heavy hail that accompanied a severe thunderstorm caused much damage to growing crops and property. Much poultry perished.
Jessamine and Woodford Cos., Ky.	2	4:30–5 p. m.	1 10		375,000	Wind	No remarks.
Quincy, Mich.	2	5–6 p. m.	880		40,000	High winds, rain and hail.	Blew down buildings, a hangar, power and telephone lines. Corn and other crops damaged.
Gibson Station, Va.	2	8–9:30 p. m.	1 10		(2)	Hail, tornadic wind.	$13,800 total damage for storms of 2d, 4th, 7th. Damage to tobacco, corn, truck crops, timber; 3 buildings damaged; cow, calf, and chickens killed.
Columbia, S. C.	2	9:30 p. m.			1,500	Lightning	2 fires caused damage, mostly to cotton at the Pacific Mills.
West Columbia, S. C.	2	9:30 p. m.		1		Lightning	No remarks.
Loudoun Co., Va.	3–4	11:30 p. m.–1 a. m.				Rain	Washed out bridge and 2 fills of highway between Mountville and Oatlands.
Webster, W. Va.	3	P. m.				Heavy hail	Extensive damage to gardens.
Hinton, W. Va.	3	P. m.				Severe electrical	Trees blown across, telephone wires disrupted service. Lightning disrupted power service for 4 hours.
Smyth Co., Va.	4	During night				Rain	In Marion and Rye Valley areas, heavy damage to roads; several bridges washed out; bottomland crops and contents of several homes and business places damaged.
Wannaska, Minn., and vicinity.	4	8 a. m.	1 2		10,000	Hail	Heavy hail caused considerable damage to growing crops.
Gibson Station, Va.	4	2–4 p. m.	1 10		(2)	Hail	
Toole Co., near Dunkirk, Mont.	4	Evening				Moderate hail	Storm lasted 15 minutes, with stones size of marbles. Crop loss 60–90 percent, mainly to wheat. Storm from southwest.
Nicopolis Church Community, Bedford Co., Va.	4	9:30–10 p. m.	1 2	0		Tornado	Attended by heavy hail as large as golf balls; roofs torn from houses and barns; trees twisted and uprooted; corn beaten down; tobacco stalks chopped off.
Brown's Dan Creek, Va.	4	11–11:10 p. m.	1 2		5,000	Hail, wind	Damage to tobacco.
Fergus Co., northeast of Denton, Mont.	5	3–4 p. m.	1 4–10		200,000	Severe hail	Storm moved from southwest. Heavy damage to wheat. Stones size of hens' eggs. Storm lasted 30 minutes and was 25 to 35 miles long.
Langdon, N. Dak.	5	5–7 a. m.			45,000	Heavy wind, light hail.	Wind blew down 4 hangars, wrecked 10 planes.
Northeastern Sheridan Co., Mont.	5	5–5:20 p. m.	880		9,500	Moderate hail, wind	Storm moved 6 miles in Montana, 14 miles in North Dakota. Considerable damage to wheat from hail. Wind caused $500 damage to property, $4,000 to crops. Hail caused $5,000 damage.
Gray Co., Kans.	5	5:45 p. m.	17		5,200	High wind	Winds of tornadic violence 5 miles southwest of Cimarron, but no actual funnel cloud observed. Outbuildings destroyed; barns unroofed; great number of trees blown down.
Columbia, S. C., 9 miles east.	5	Afternoon			3,000	Lightning	Garage containing machinery and oil burned.
Rome, Ga.	5	Afternoon			12,000	Wind	Several buildings damaged; large number of trees blown down; power and telephone services disrupted.
Northeastern Fergus Co., Mont.	5	Afternoon				Severe hail	From east, path 50 miles; damage to wheat.
Northern Prairie Co., Mont.	5	7–7:12 p. m.	1 10		375,000	Heavy hail	Storm moved from west; path 30 miles long. Damage to small grains and feed crops.
Southwestern Garfield Co., Mont.	5	7–7:30 p. m.	1 10–12			Heavy hail	Path 100 miles long. Hail ½–¾ inch in diameter did considerable damage to grain and alfalfa. Heavy rain accompanied storm.
Southern Dawson Co., Mont.	5	7:30–8 p. m.	1 5		1,500,000	Moderate to heavy hail, rain.	Storm moved from west; path 50 miles long. Stones size of peas did severe damage to small grains, corn, sugar beets, and potatoes. Windows broken. Roads washed out.
Southern McCone Co., Mont.	5	8–8:15 p. m.	1 4			Moderate to heavy hail.	Storm moved from west-northwest; path 18 miles long. Damage severe to grain crops caused by stones size of hens' eggs. Some damage to buildings.
Wibaux Co., Mont.	5	8:15–8:45 p. m.	1 3		100,000	Heavy hail	Stones ½ inch in diameter; moved from northwest; path 12 miles long. Considerable damage to wheat, oats, corn, and barley.
Hill Co., near Box Elder, Mont.	5		1 2		1,000	Light hail	Storm moved from southwest; path 6 miles long. Little damage from stones, ¾ inch in diameter, except to wheat. Storm lasted 5 minutes.
Southeastern Rosebud Co., Mont.	6	3 a. m.	1 2			Moderate hail	Storm from northwest; considerable damage to barley and wheat.
Madison Co., Ala., Huntsville to Plevna.	6	3:30–4:10 p. m.			100,000	Hail	Stones size of marbles to a little larger. Damage to corn and cotton.
Central Fallon Co., Mont.	6	4:30–4:40 p. m.	1 1–2		72,000	Moderate hail, wind	$50,000 hail damage. Storm moved from west; path 25 miles long with stones ¼ to ½ inch in diameter; damage to wheat, flax, and barley, $22,000. Wind damage: $2,000 to property, $20,000 to crops.
Rock, Mich.	6	6:15–6:45 p. m.			12,000	Hail, high wind, rain, lightning.	Hail averaged ½ inch, with largest size ¾ inch. Barn destroyed by lightning; damage, $8,000.
Saline, Co., Kans.	6	Evening				Wind, hail	Storm hit in Assaria neighborhood 8 miles south of Salina. Lightning destroyed a barn. Roofs torn from barns; cattle sheds blown from foundations; crops destroyed by hail.
Jay Co., Ind.	6	7:15 p. m.	1 3		10,000	Wind, hail	Crops, trees, buildings damaged; wires down.
Palo Verde Valley, Calif.	6–9	Intermittent			127,000	Thunderstorms	Alfalfa hay, seed, and light airplanes damaged. Damage by wind 75 percent, by rain, 25 percent. Some damage by lightning to power and telephone lines.
Gibson Station, Va.	7	3–4:30 p. m.	1 10		(2)	Hail	
West-central Fergus Co., Mont.	7	4:07–4:12 p. m.	1 5			Light hail	Moved from northwest; path 10 miles long. Up to 75 percent damage reported, mainly to wheat.
Keeling, Va.	7	Late afternoon.			25,000	Hail	Damage to tobacco crop.
Mecca, Calif., and vicinity.	8	2:40–6:10 p. m.				Thunderstorm	Heavy rain caused damage to canal spillway and roads estimated at $75,000. Young vegetable plants injured and much topsoil lost.
Hand Co., S. Dak., north and east of Miller.	8	6–7 p. m.				High wind, lightning.	Spotted damage to property and crops in a 15-mile area.
Rockbridge Co., Va.	8	6 p. m.	880			Hail	Stones size of ice cubes; damage to corn, gardens, farm building roofs; severe washing to corn, fallowed fields.
Southern Hamden Co., Mass.	8	Late afternoon				Local flash flood	6 inches of rain fell in 1¾ hours, stalling traffic and blocking roads.
Bedford, Wyo.	8	Evening				Flash flood	Several thousand dollars' damage to buildings and crops. Some cattle, chickens, and sheep drowned.
Brawley, Calif.	8					Wind	Property and power lines damaged.
Niland, Calif., near	9	7:15 a. m.				Rain	Steel tower supporting power line washed out.
Needles, Calif., and vicinity.	9	1–2:30 p. m.			1,000,000	Rain	About 500 feet of railroad tracks washed out. Ice plant flooded, covering machinery with soil. Several hundred feet of highway washed out.
Max, N. Dak., 8 miles northwest.	9	5 p. m.	100		30,000	High wind, heavy rain.	Possibly a tornado. A barn wrecked and several fields of grain flattened.
Cortland, N. Y., near	9				3,000	Hail	500 turkeys killed; hailstones size of walnuts.

See footnotes at end of table.

SEVERE LOCAL STORMS FOR AUGUST 1947—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Liberty, Liberty Co., Tex.	10	3 p. m.	1 10			Wind, hail	Only slight damage by hail, mostly to pecan trees and utilities.
Houston, Harris Co., Tex.	10	4:30 p. m.	1 10			Wind	Several hundred thousand dollars' damage to airplanes and plate glass; considerable damage to trees and utility lines.
Rusk, Cherokee Co., Tex.	10	5:30 p. m.	600		$2,000	Wind	Barns and small buildings damaged.
Gatesville, Coryell Co., Tex.	11	7 a. m.	100		4,000	Wind	Freight warehouse unroofed.
Central Liberty Co., Mont., northwest of Chester.	11	1-1:20 p. m.	1 2			Moderate hail	Path 20 miles long, from southwest; considerable damage, mainly to wheat.
Echo, Colo.	11	P. m.		1	15,000	Flash flood	Man killed when his truck crashed through a bridge.
North Saguache, Colo.	11	P. m.			5,000	Flash flood	18 families evacuated.
Lower Milk River Valley in Roosevelt, Richland, & McCone Cos., Mont.	12	2-3 p. m.			1,000,000	Severe hail, rain	Storm followed the Milk and Missouri Rivers for about 150 miles. Damage 100 percent to wheat and other grain not harvested.
Denver, Colo.	12	2:30 p. m.			3,000	Lightning	Lightning fired a home.
East of Terry, Mont.	12	4-4:10 p. m.	1 3		40,000	Moderate hail, wind	Storm moved from northwest; path 6 miles long; stones ¼ to ½ inch in diameter. Considerable damage to wheat and some damage to flax. Wind damage to crops, $5,000.
Southwest Dawson Co., Mont.	12	4-4:20 p. m.			5,000	Hail	Storm moved from west, covering entire county; but hail fell only in a narrow strip near Marsh. Stones size of marbles damaged wheat and gardens.
Northeast McCone Co., Mont.	12	4 p. m.	1 2			Heavy hail, rain	Stones size of marbles did considerable damage to grains and gardens. Storm moved from southwest; path 6 miles long.
Fort Wayne, Ind.	14	3 p. m.			16,000	Wind	Airplanes damaged.
Montgomery Co., Ohio	14					Thunderstorm	Wind 45 m p. h., at Dayton Airport. Some local damage from high winds and severe lightning.
Northern Franklin Co., Vt.	15	1-2 p. m., E. S. T.				Local flash flood	West Franklin flooded; 5 bridges impassable; houses in center of town flooded to first-floor windowsills.
Piscataquis, Penobscot, and Aroostook Cos., Maine.	15	2-4 p. m., E. S. T.			35,000	Heavy rains, lightning.	Several barns, considerable livestock destroyed; torrential rains damaged potato crop locally.
Eastern Middlesex and southern Essex Cos., Mass.	15	7-8 p. m.; 9:30-11 p. m., E. S. T.			10,000	Excessive rain, lightning, high wind.	Lightning damaged many houses in the Woburn-Melrose-Stoneham-Wakefield area.
Northeast and northwest Choteau Co., Mont.	16	6-6:30 p. m.	1 1½			Moderate hail	70-75 percent damage to mustard, flax, wheat, barley, and oats. Storm moved northeast, then east; stones size of marbles.
Hill Co., north of Box Elder, Mont.	16	6:30-6:40 p. m.	1 2		5,000	Moderate hail	Stones size of peas; moved from southwest; path 20 miles long. Damage considerable, mainly to wheat.
Fergus Co., east of Roy, Mont.	16	7:10-8:30 p. m.	1 2		1,600	Hailstorms	2 storms within 2 hours at the same place. First caused heavier damage of $1,600, mainly to wheat.
Northern Hennepin Co., Minn.	17	P. m.			10,000	Thundersqualls	11 airplanes damaged at Victory Airport, Brooklyn Center. Some damage to trees. Some corn and small grains lodged.
Mishawaka, Ind.	19	4 p. m.			13,000	Wind	Airplanes damaged.
Judith Basin Co., Mont.	19	5:30-5:45 p. m.	1,760		5,000	Hail	Considerable damage, principally to wheat. Storm moved from northeast; path 12 miles long. Stones size of beans.
Lac Qui Parle Co., Minn.	19-20	9:30 p. m.-4 a. m.	m		30,500	Electrical	A house, several barns, and some strawstacks struck and destroyed by fire. Communication and power lines disrupted.
Janesville, Wis.	20	1:22 p. m.			200,000	Thunderstorm	Lightning struck power plant: all equipment ruined. Several chimneys in city struck; little damage. Heavy rain flooded streets, basements. Wind blew down trees.
Mukwonago, Wis.	20	1:30-3:30 p. m.		1	45,000	Electrical	Large, air-conditioned dairy barn struck and burned.
Western Oconto and eastern Shawano Cos., Wis.	20	4-11 p. m.			40,000	Electrical	4 barns and contents burned when struck by lightning.
Northern Daniels Co., Mont.	20	5:45-6:15 p. m.	1 5	0	350,000	Tornado, wind, hail	Tornado parallel to international boundary in northeast Montana. Storm moved from west-northwest. Crops and farm buildings destroyed. Hailstones 2 to 3¼ inches in diameter followed tornado.
Milton, Wis.	20	P. m.			30,000	Electrical	Barn and contents burned when struck by lightning.
Baltimore, Md.	20	P. m.				Lightning, wind	Lightning ripped off roofs, hit a gasoline tank, and streetcar. Many trees blown over.
Montgomery Co., Md.	20	P. m.				Lightning	6 farm homes struck and 4 barns destroyed by lightning.
Geauga Co., Ohio	20					Thunderstorm	6 cows killed by lightning.
Columbus, Ohio	21	5:45 p. m.		1	50,000	Thunderstorm	Broad St. bridge badly damaged by lightning. 4 persons injured, 1 fatally.
Central Valley Co., Mont.	21	7-7:30 p. m.	1 10		8,000	Hail, wind	Storm came from west covering area 10 by 10 miles; damage to small grains. Wind damage to barn and some smaller buildings.
South Hill, Va., near	21	Night		1		Electrical	Tobacco barn destroyed.
Gilead, Mich.	22	Noon			10,000	Thunderstorm	"Minor twister" reported. No injuries.
Judith Basin, east of Stanford, Mont.	22	1-1:15 p. m.	1,760		5,000	Light hail	Considerable damage to wheat; path 10 miles long. Hailstones size of beans.
Eastern Teton Co., Mont.	22	2:30-3 p. m.			200,000	Heavy hail	Storm moved from northwest and was spotty over entire county. Heavy hail ¼ inch in diameter destroyed $200,000 worth of wheat, barley, and mustard. Windows, neon signs, and roofs also damaged.
Pendroy Mont., and eastward into Teton Co.	22	2:45-3:05 p. m.	1 30		300,000	Heavy hail	Came from southwest. Considerable damage mainly to mustard. Path 75 miles long. Hail ½ inch in diameter.
Pondera Co. near Conrad, Mont.	22	3:05 p. m.	1 5-12		450,000	Heavy hail, wind	Storm originated just north of Augusta, running northeast to Marias River, splitting with part going south of Chester. Storm came from southwest; stones up to size of hens' eggs damaged wheat, flax, mustard, oats, and sugar beets; minor damage to turkeys, chickens, young calves, and sheep. Wind did some damage to buildings. Length of storm 25 miles.
Shelbyville, Ky., and vicinity.	22	3:30 p. m.	1 5		2,000	Wind	Damage mostly to barns and small farm structures.
Fergus Co., Mont.	22	3:30-4 p. m.	1 4		50,000	Light hail, strong wind.	Hail light; damage from strong wind from southwest, considerable to spring and winter wheat.
Southwestern Toole Co., Mont.	22	4-5 p. m.	1 1-2		20,000	Hail, wind	Moved eastward from Pondera County. Hail size of hens' eggs damaged crops.
Pondera Co., Mont., central and eastern sections.	22	4:45-5:05 p. m.	1 6-10		1,000,000	Heavy hail	Storm moved from southwest; path 34 miles long. Damage mainly to mustard, winter wheat, barley, oats, and flax. Windows broken, shingles battered by stones as large as small eggs.
Southwest part of Liberty Co., eastward into Hill Co., Mont.	22	5-5:20 p. m.	1 30		500,000	Severe hail, wind	Storm from southwest. $500,000 damage to mustard, wheat. Some damage to windows, roofs.
McCone Co., Mont., north of Circle.	22	6:30-6:50 p. m.	1 2			Hail, wind, heavy rain.	Considerable damage to town of Circle; most damage by heavy rains causing washouts and flooded basements.
Powell Co. near Helmville, Mont.	22	Afternoon	1 20		8,000	Heavy hail	Storm from south. Damage to grains and gardens. Stones size of walnuts.
Ravalli Co., Mont., southeast section.	22	9:45-10:05 a. m.	1 3-4			Hail	Hail size of marbles; considerable damage to grains and gardens; storm from southwest.
Western Chouteau Co., Mont.	22	Evening				Moderate hail	Considerable to severe damage to wheat and barley. Storm rom west-southwest.
Bass Lake, Ind.	24	2 p. m.			50,000	Wind, hail	Buildings, trees, crops, damaged; very large hail.
Northern and central S. C.	24-25	Afternoons		3	50,000	Thunderstorms	A series of thunderstorms, accompanied by severe lightning, high winds, heavy showers. Injured 1 person. Extensive damage by lightning, especially at Chester and Columbia on afternoon of 25th.
Montgomery and Boone Cos., Ind.	24	P. m.			10,000	Wind	Wires down; buildings and trees damaged.
Cheraw, Colo.	24	P. m.		1		Lightning	Woman struck by lightning, killed.

See footnotes at end of table.

SEVERE LOCAL STORMS FOR AUGUST 1947—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Reedy-Sandyville area, W. Va.	25	Afternoon				Severe electrical, heavy rain.	Small damage by lightning. Flash floods Middle and Left Reedy Creeks flooded roads, damaged gardens and crops, washed out some railroad track bed; washed post office building off foundation at LeRoy.
Worcester and Middlesex Cos., Mass.	26	1–3 p. m., E. S. T.			$12,000	Torrential rain, lightning, high wind.	State House damaged and Doric Hall flooded; numerous traffic accidents. Rain and lightning damaged many buildings, mostly in Worcester County and Greater Boston area; several small boat accidents.
Hagerstown, Md	26	P. m.		1		Thunderstorm	One person killed by lightning.
Western Port, Md	26	P. m.				Heavy rains, strong winds.	Much damage to crops and gardens by floods. Highways flooded.
Baltimore, Md	26	6:48 p. m.		1		Thunderstorm, heavy rains.	One person killed by lightning.
River Falls, Wis., vicinity of.	27	4:30–5 p. m.	1,760			Hail	Damage to corn and buckwheat over 20-mile path estimated at $10 per acre of cropland.
Southern Oconto and southeastern Shawano Cos., Wis.	27–28	P. m. 27—a. m. 28th.			[2] 80,000	Electrical	Church and filled barn struck by lightning, burned.
Cedar Co., Nebr	27	8:50 p. m.	[1] 5			Heavy hail	Path 5 miles long. Principal damage to corn. Some wind damage to buildings and stacked hay and straw. Damage, several thousand dollars.
Utica, Wis., vicinity of	28	P. m.	1,760			Hail	Tobacco and corn damaged over 4-mile path an estimated 50 percent.
Gays Mills, Wis., vicinity of.	28	P. m.				Hail	Tobacco and corn damaged.
Southeastern Muskegon, northern Ottawa, and Kent Cos., Mich.	29	1:15–1:35 p. m.	3,500		108,000	Hail	This storm or group of storms wrought considerable damage in Kent City, Sparta, and Casnovia. High winds and heavy hail averaging ½ to 2 inches in diameter caused severe damage to fruit, corn, and truck; some fields a total loss.
Lapeer, Mich	30	12:30 p. m.			5,000	Hail, high winds, lightning.	Hailstones averaged ½ inch; largest, ¾ inch.
Hillsdale, Mich	30	3:45 p. m.			100,000	Severe thunderstorms.	In Hillsdale, northeastern Branch, and southeastern Calhoun counties; buildings and trees blown over roads, power and telephone lines. Hillsdale and Quincy hardest hit. Crop damage by hail and wind greatest in Ransom and east end of Amboy townships.
Henry Co., Ohio	30	5 p. m.	[1] 4			Heavy hail	Hail covered an area 4 by 20 miles. Corn, soybeans, tomatoes, and sugarbeets severely damaged.
Seneca Co., Ohio	30	7:15 p. m.				Thunderstorm	Streets blocked and several homes damaged by falling trees. Power and telephone lines down. Basements and streets flooded.
Trumbull and Mahoning Cos., Ohio.	30	Evening				Thunderstorm	Streets and basements flooded. Number of homes struck and barn destroyed by lightning.
Wyandot Co., Ohio	30	10:45 p. m.				Heavy hail	Details lacking.
Minneapolis-St. Paul, Minn., and vicinity.	31	P. m.			10,000	Thundersqualls	In Bloomington Township, roof and wall of Hoff Manufacturing Plant torn away; trees uprooted; poles and wires down; automobiles damaged; and sailboats overturned.
Vicinity of Le Center, Minn.	31	8:25 p. m.	134	1	150,000	Tornado, hail	7 barns, 3 houses, many outbuildings, granaries, silos, windmills, farm machinery, and automobiles demolished; livestock and poultry killed; trees uprooted; poles, wires, and fences down; haystacks and grain shocks scattered; growing crops damaged. 8 persons injured. Path of storm about 30 miles long; moved from west. Light to heavy hail caused considerable damage to growing crops.

[1] Miles instead of yards.

[2] Represents total damage from three storms, 2d, 4th, 7th.

LATE[1] STORM REPORTS FOR JULY 1947

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Monona, Harrison, and Pottawattamie Cos., Iowa.	12	Early evening				Hail	Portions of 3 counties affected. In Monona County most severe damage confined to strip 6 to 7 miles long and 1 mile wide; crop damage estimated at $30,000. In Harrison County, damage in strips, with extensive damage in the Logan and Missouri Valley vicinities. Thousands of acres affected, with total destruction in area of 12 square miles. Strong winds accompanied hail and accounted for 25 to 35 percent of total damage. Estimated damage to crops, over $1,000,000. Numerous small farm buildings blown over or demolished.
Clinton, Clinton Co., Iowa	27	Early morning.			$100,000	Wind	Gusts reported up to 75 m. p. h. ⅓ of city without electrical power for a day. A radio tower blown over; 1,000 telephones put out of order; and many fallen trees disrupted traffic. On nearby farms corn flattened and many stalks broken off; small grain shattered. Storm moved eastward.

[1] CORRECTION: In the storm reports for June 1947, the storm which was recorded for Colusa, Sacramento, and Yola Cos., Calif., for June 11–12, should have read June 10–11.

SOLAR RADIATION AND SUNSPOT DATA FOR AUGUST 1947

[Solar Radiation Investigation Section, I. F. HAND in Charge]

SOLAR RADIATION OBSERVATIONS

TABLE 1.—*Solar radiation intensities during August 1947*

[Gram calories per minute per square centimeter of normal surface]

MADISON, WIS.

Date	Sun's zenith distance: A.M. 78.7°	75.7°	70.7°	60.0°	0.0°	P.M. 60.0°	70.7°	75.7°	78.7°	Vapor pressure: 7:30 a.m.[1]	1:30 p.m.[1]
	Air mass: 4.81	3.84	2.88	1.92	0.96*	1.92	2.88	3.84	4.81		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1			0.40	0.53						11.8	10.2
5	0.54	0.62	.79	.98	1.22					24.2	24.2
6	.59	.69	.80	.98	1.22					23.4	22.6
8	.55	.66	.80	.98	1.29					18.3	21.1
11			.32	.52	.94					19.6	23.4
12		.39	.49	.66	1.12					23.4	24.2
15		.76	.84	1.01	1.18					17.0	19.6
18		.61	.76	.94	1.20					25.0	25.0
19		.40	.49	.77	1.24					21.8	25.0
21		.36	.64	.76	.95					24.2	28.6
22			.49	.74	1.03					27.7	27.7
23		.52	.70	.88	1.12					25.9	22.6
26	.76	.91	1.06	1.19	1.38					12.5	12.5
27	.77	.94	1.04	1.18	1.38					12.3	15.8
28			.55	.70						20.4	23.4
30		.59	.76	.91	1.10					24.2	25.9
Means	.64	.62	.68	.86	1.17						
Departures	−.01	−.13	−.20	−.20	−.13						

LINCOLN, NEBR.

	Air mass: 4.77	3.81	2.86	1.91	0.95*	1.91	2.86	3.81	4.77		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
4					1.29	0.97	0.75	0.62	0.54	20.4	20.4
5					1.23					18.3	19.6
6					1.24	1.01	.84	.71	.62	22.6	24.2
7					1.28	1.06				19.0	23.4
8					1.17					20.4	27.7
18					1.25	.94	.82			21.8	21.8
19			0.92	1.06	1.22	.92	.71	.54	.35	25.0	24.2
20				1.03	1.27	.99	.79			21.8	22.6
21					1.16	.84	.71			22.6	21.8
22				1.03	1.28					15.8	19.6
23				1.03	1.28					20.4	21.1
29				.97	1.24					22.6	24.2
Means			(.92)	1.02	1.24	.96	.77	.62	.50		
Departures			+.01	−.07	−.07	−.10	−.09	−.11	−.12		

BLUE HILL, MASS.

	Air mass: 4.86	3.89	2.92	1.94	0.97*	1.94	2.92	3.89	4.86		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1	0.34	0.44	0.64	0.84	1.33	1.18	1.01	0.79	0.71	10.5	11.9
2	.67	.73	.88	1.05						13.3	12.6
10						1.20	1.01	.86	.76	18.2	18.2
12	.59	.66	.76	.95						17.7	17.7
14						.42	.31	.24	.19	26.4	30.0
15						.50	.33			27.3	28.6
24			.80	1.01		.85	.64	.51	.38	21.9	25.2
25				.72						23.8	22.4
31						1.15	.96	.86	.74	22.7	15.5
Means	.53	.61	.77	.91	(1.33)	.88	.71	.65	.56		
Departures	−.12	−.16	−.11	−.12	+.02	−.15	−.14	−.04	−.03		

TABLE 1.—*Solar radiation intensities during August 1947*—Con.

[Gram calories per minute per square centimeter of normal surface]

CLIMAX, COLO.

Date	Sun's zenith distance: A.M. 78.7°	75.7°	70.7°	60.0°	0.0°	P.M. 60.0°	70.7°	75.7°	78.7°	Vapor pressure: 7:30 a.m.[1]	1:30 p.m.[1]
	Air mass: 3.24	2.59	1.94	1.29	0.65*	1.29	1.94	2.59	3.24		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1		1.11	1.22	1.32	1.47						
2				1.31	1.45						
4				1.28							
6		1.16	1.27	1.40	1.51	1.29	1.16	1.02	0.88		
7		1.08	1.22	1.34	1.47						
8		1.08	1.18	1.32	1.47						
9		1.08	1.19	1.32	1.45						
10						1.30	1.18	1.06			
11			1.24	1.36							
12				1.36	1.51	1.37	1.22	1.14	1.06		
14			1.25	1.38	1.51						
20			1.28	1.38							
21			1.26	1.37	1.55	1.40					
24				1.41	1.57						
25			1.30	1.45	1.52						
26			1.35	1.44	1.53						
29			1.24	1.36							
30					1.54	1.35	1.25	1.15	1.08		
31			1.29	1.42	1.55	1.30	1.16	1.04	.97		
Means		1.10	1.25	1.37	1.51	1.34	1.19	1.08	1.00		
Departures		.00	+.03	+.03	.00	+.02	+.04	+.05	+.08		

TABLE MOUNTAIN, CALIF.

	Air mass: 3.76	3.01	2.26	1.51	0.75*	1.51	2.26	3.01	3.76		
August	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
3				1.36							
5				1.31							
12				1.37							
13				1.37							
14				1.39							
16				1.31							
17				1.31							
18				1.33							
19				1.34							
20				1.42							
21				1.46							
22	1.12	1.20	1.30	1.42	1.54						
23				1.43							
24				1.44							
26				1.41							
27				1.45							
28				1.44							
29				1.44							
30	1.17	1.25	1.35	1.48	1.59						
Means	(1.14)	(1.22)	(1.32)	1.39	(1.56)						
Departures	+.02	+.01	+.02	.00	+.02						

*Extrapolated.

[1] 75th meridian time.

Explanations of the tables and references to descriptions of instruments, stations, methods of observation, and summaries of data are given in the Monthly Weather Review, vol. 72, page 43, January 1944. A list of pyrheliometric stations is given on page 45 of the same Review. An explanation of the formula used in computing the air mass values for each station will be found in vol. 75, page 47, March 1947.

TABLE 2.—*Daily totals and weekly means of solar radiation (direct + diffuse) received on a horizontal surface*

[Gram calories per square centimeter]

Date	Washington, D. C.	Madison, Wis.	Lincoln, Nebr.	New York, N. Y.	Fresno, Calif.	Fairbanks, Alaska	Columbia, Mo.	Boston, Mass.	Nashville, Tenn.	Twin Falls, Idaho	La Jolla, Calif.	Riverside, Calif.	Blue Hill, Mass.	Newport, R. I.	Salt Lake City, Utah	Put-In-Bay, Ohio	State College, Pa.	Davis, Calif.	East Wareham, Mass.	New Orleans, La.	Toronto, Canada	Ithaca, N. Y.	Boulder, Colo.	Pearl Harbor, Hawaii	Honolulu, Hawaii
1947	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
July 30	638	527	601	566	746	377	709	573	632	556	598	567	639	645	----	561	538	715	603	-----	455	379	493	605	667
July 31	196	579	652	257	741	229	565	394	614	608	640	608	406	380	525	640	163	688	427	620	658	323	305	458	375
Aug. 1	669	367	608	643	750	450	551	589	420	616	566	603	699	660	379	636	622	698	641	607	645	425	403	615	511
Aug. 2	587	498	660	585	725	275	699	617	548	412	534	326	695	690	506	503	618	706	511	718	480	442	522	651	714
Aug. 3	400	461	672	446	689	267	699	468	616	348	602	610	572	646	600	604	318	692	615	602	534	289	413	663	694
Aug. 4	385	590	681	281	764	212	692	544	600	532	596	605	630	616	442	599	383	690	606	556	571	362	421	654	698
Aug. 5	619	660	614	382	685	431	690	435	518	622	416	587	597	619	532	540	440	696	568	644	583	338	326	370	460
Means	499	526	641	451	716	320	658	517	564	528	564	558	606	608	497	583	440	698	567	625	561	366	413	574	588
Departures	+15	+45	+119	−8	+49	−24	....	+89	+112	−39	+16	−2	+102	+89	....	+34	−22	+27	+61	+182	+109	−126	−77	....	....
Aug. 6	589	609	630	566	694	283	665	533	508	622	536	581	654	668	695	592	548	689	643	482	508	405	649	643	692
Aug. 7	514	486	686	226	717	311	456	351	453	610	458	504	445	531	367	443	556	687	555	541	531	316	455	653	654
Aug. 8	489	606	589	93	634	406	694	380	592	613	589	589	394	492	380	541	420	685	469	567	270	330	404	612	695
Aug. 9	478	486	732	246	415	141	692	100	512	540	426	542	161	353	388	371	322	694	237	620	369	122	590	657	707
Aug. 10	273	605	680	149	707	---	635	501	385	566	594	590	501	435	265	538	300	685	330	126	586	273	503	624	676
Aug. 11	329	538	636	482	702	....	494	472	446	619	603	639	519	493	668	549	328	666	441	227	423	304	304	626	695
Aug. 12	523	588	564	419	704	142	385	526	501	616	614	674	625	649	606	592	355	659	602	468	465	344	482	492	610
Means	456	560	645	312	653	257	573	409	486	598	546	588	471	517	481	518	404	681	468	433	450	299	484	615	676
Departures	+1	+84	+146	−107	+18	−70	....	+3	+27	+47	+28	+53	−13	+30	....	+26	−60	+27	+9	−1	+16	−156	+6	....	....
Aug. 13	527	556	305	384	694	192	483	466	299	620	621	647	576	544	....	596	269	642	516	461	454	225	556	614	661
Aug. 14	573	478	552	382	687	495	328	450	543	582	630	654	518	452	462	414	461	641	125	373	448	286	520	466	530
Aug. 15	588	552	133	454	688	....	292	434	214	377	-------	646	497	480	533	119	302	612	466	436	154	244	569	583	616
Aug. 16	603	397	539	166	670	454	567	31	234	578	-------	563	83	94	539	214	140	663	445	-----	581	112	158	624	593
Aug. 17	327	577	596	101	654	....	658	357	493	594	-------	598	289	220	678	440	266	637	349	404	382	164	372	638	673
Aug. 18	238	574	597	227	655	406	606	360	462	566	-------	598	383	305	625	506	136	613	296	514	480	221	296	682	696
Aug. 19	379	437	523	416	667	78	646	402	475	336	-------	574	475	500	624	555	304	596	458	226	225	250	570	529	569
Means	462	510	464	304	674	325	512	357	389	522	-------	611	403	371	576	406	268	629	379	402	389	215	434	591	620
Departures	+18	+53	−26	−80	+52	+15	....	−22	−40	+1	-------	+77	−61	−71	....	−67	−151	+19	−52	−6	−10	−221	−18	....	....
Aug. 20	421	408	580	166	680	152	420	42	494	344	542	627	72	85	457	503	393	488	119	343	207	284	455	616	657
Aug. 21	193	448	541	210	696	371	536	283	485	504	579	599	278	368	372	445	103	578	518	622	221	105	573	471	600
Aug. 22	209	452	560	458	684	....	610	517	350	523	631	623	586	580	634	412	43	661	534	417	344	180	359	654	690
Aug. 23	479	549	507	437	663	432	556	491	504	592	574	618	554	571	614	542	336	636	545	516	492	241	261	598	668
Aug. 24	540	460	415	469	656	440	525	494	514	582	458	604	569	565	550	539	462	590	541	-----	341	374	366	606	628
Aug. 25	558	183	146	418	653	446	537	475	427	505	200	494	541	515	....	424	323	625	498	-----	359	314	580	339	392
Aug. 26	510	603	460	281	641	409	391	209	423	556	179	304	252	322	....	385	244	595	303	431	138	140	557	370	311
Means	416	445	458	348	668	375	511	359	457	515	452	553	408	429	526	464	272	596	437	466	300	234	450	522	564
Departures	−11	−1	−9	−25	+65	+84	....	−4	+8	−7	−50	+30	−65	−23	....	−10	−153	−5	−9	+62	−74	−213	+26	....	....
Aug. 27	90	592	498	95	652	325	529	343	486	322	499	508	356	189	185	576	62	594	202	623	554	270	504	635	615
Aug. 28	250	456	458	89	648	355	606	205	461	510	572	548	242	137	550	511	387	578	160	648	477	312	578	558	590
Aug. 29	502	245	430	526	644	158	641	436	527	558	594	617	494	478	572	175	388	604	534	618	294	300	386	595	630
Aug. 30	390	534	337	282	640	415	566	444	521	546	588	615	476	511	591	275	261	593	469	501	356	224	483	506	493
Aug. 31	498	536	447	478	622	124	576	442	408	546	547	553	442	426	570	531	363	623	461	524	588	398	504	649	609
Sept. 1	389	497	511	473	606	305	....	522	342	517	547	545	526	596	564	367	442	604	559	618	362	402	557	631	666
Sept. 2	448	556	417	248	609	121	....	52	570	295	543	550	40	273	410	580	373	622	279	478	449	311	507	614	642
Means	367	488	443	313	632	257	....	349	474	471	556	562	368	373	492	431	325	603	381	573	440	317	503	598	606
Departures	−57	+73	+4	−40	+57	+10	....	−11	+35	−19	+60	+64	−36	−40	....	−8	−101	+31	−36	−143	+53	−130	+64	....	....

Accumulated Departures on September 2, 1947

	+6,853	+21	−1,960	−5,523	+7,616	....	....	−1,393	−889	+644	−4,102	+8,288	−1,204	−4,823	....	....	−6,083	+2,800	....	.....	−3,500	−24,801	+1,106	....	....

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR AUGUST 1947

By Lucy T. Day

[Equatorial Division, U. S. Naval Observatory]

[Communicated by the Superintendent, U. S. Naval Observatory.] All measurements and spot counts were made at the Naval Observatory from plates taken at the observatories indicated. Difference in longitude is measured from the central meridian, positive toward the west. Latitude is positive towards the north. Areas are corrected for foreshortening and expressed in millionths of Sun's hemisphere. For each day under Mount Wilson group number, longitude, latitude, area of spot or group, and spot count, are included respectively: number of groups, assumed longitude of center of the disk, assumed latitude of center of the disk, total area of spots and groups, and total spot count]

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	*h m*		°	°	°	°				
Aug. 1	10 20	8752	−80	263	−12	80	582	3	G	U. S. Naval.
		8752	−70	273	−10	72	436	3		
		8750	−67	276	−15	70	121	1		
		8749	−65	278	−9	67	109	2		
		8745	−29	314	−20	39	1,794	35		
		8744	−22	321	+20	25	48	10		
		8744	−20	323	+20	24	206	1		
		8748	+16	359	+18	21	24	3		
		8743	+18	1	−20	32	170	12		
		8743	+22	5	−21	35	436	1		
		8736	+24	7	+16	25	24	1		
		8751	+25	8	+29	34	12	1		
		(9)		(343)	(+6)		3,962	73		
2	10 27	8757	−88	242	−15	88	97	2	G	Do.
		8756	−75	255	+11	75	6	2		
		8752	−66	264	−12	68	630	6		
		8752	−58	272	−9	60	339	7		
		8750	−54	276	−14	58	145	1		
		8749	−50	280	−8	53	73	6		
		8745	−26	304	−20	37	364	1		
		8745	−16	314	−19	30	776	30		
		8745	−8	322	−18	27	509	1		
		8744	−10	320	+20	17	48	6		
		8744	−7	323	+20	16	170	1		
		8754	+8	338	−36	45	6	2		
		8748	+29	359	+18	31	24	7		
		8743	+29	359	−20	39	97	10		
		8743	+35	5	−20	44	339	1		
		8751	+37	7	+28	43	12	5		
		8736	+38	8	+16	39	24	1		
		(12)		(330)	(+6)		3,659	80		
3	13 40	8757	−74	241	−12	76	36	2	G	Do.
		8757	−68	247	−15	71	194	4		
		8756	−59	256	+11	59	121	6		
		8752	−49	266	−11	52	630	10		
		8752	−42	273	−9	45	315	15		
		8750	−39	276	−13	43	145	1		
		8749	−33	282	−9	36	97	2		
		8745	−10	305	−20	28	339	1		
		8745	0	315	−19	25	436	36		
		8745	+7	322	−18	26	533	1		
		8744	+4	319	+20	15	97	11		
		8744	+9	324	+20	17	170	1		
		8753	+33	348	+5	33	6	1		
		8743	+43	358	−19	50	73	5		
		8743	+50	5	−21	58	388	1		
		8748	+45	0	+17	47	12	2		
		8736	+52	7	+16	53	24	1		
		(11)		(315)	(+6)		3,616	100		
4	12 35	8759	−79	223	+6	79	12	1	VG	Do.
		8757	−61	241	−12	63	24	2		
		8757	−56	246	−15	60	194	3		
		8756	−46	256	+11	46	194	5		
		8752	−38	264	−11	43	776	13		
		8752	−30	272	−10	34	291	23		
		8750	−27	275	−12	32	145	1		
		8749	−20	282	−10	26	194	1		
		8755	−20	282	−27	38	24	5		
		(*)	−8	294	−12	20	6	1		
		8745	+4	306	−22	28	533	27		
		8745	+11	313	−19	27	291	25		
		8745	+20	322	−18	31	461	1		
		8744	+16	318	+20	21	24	10		
		8744	+20	322	+20	24	291	1		
		8743	+56	358	−20	62	24	5		
		8743	+62	4	−21	68	388	1		
		8748	+56	358	+17	57	12	3		
		8736	+64	6	+16	64	6	1		
		8751	+68	10	+29	70	6	1		
		(14)		(302)	(+6)		3,896	130		
5	10 20	8763	−82	208	+19	82	73	1	G	Do.
		8761	−75	215	+15	75	48	1		
		8762	−69	221	−20	72	145	8		
		8759	−64	226	+8	64	24	1		
		8757	−48	242	−12	52	12	1		
		8757	−42	248	−15	46	194	2		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR AUGUST 1947—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	*h m*		°	°	°	°				
Aug. 5	10 20	8756	−35	255	+12	35	121	3	G	U. S. Naval.
		8756	−28	262	+10	28	97	9		
		8752	−24	266	−11	29	824	16		
		8752	−16	274	−9	22	291	29		
		8750	−13	277	−13	23	145	1		
		8749	−7	283	−10	17	97	1		
		8755	−6	284	−26	33	12	4		
		8760	+10	300	+18	15	12	2		
		8745	+17	307	−22	33	436	27		
		8745	+25	315	−19	35	218	20		
		8745	+32	322	−18	41	388	1		
		8744	+27	317	+16	29	6	1		
		8744	+33	323	+19	35	242	2		
		8743	+76	6	−21	78	388	1		
		(14)		(290)	(+6)		3,773	131		
6	10 26	8766	−83	194	−31	84	194	1	VG	Do.
		8765	−75	202	−13	78	12	2		
		8763	−72	205	+19	72	145	1		
		8763	−69	208	+19	69	291	1		
		8767	−67	210	+10	67	12	1		
		8762	−60	217	−21	66	170	3		
		8762	−53	224	−20	59	242	7		
		8759	−50	227	+9	50	24	1		
		8757	−36	241	−12	40	12	1		
		8757	−29	248	−15	35	36	1		
		8756	−21	256	+11	22	145	6		
		8756	−17	260	+9	18	109	7		
		8752	−11	266	−11	21	1,018	8		
		8752	−5	272	−9	16	388	12		
		8752	+3	280	−7	14	61	9		
		8750	0	277	−13	19	388	1		
		8749	+7	284	−10	18	145	1		
		8745	+30	307	−21	41	315	26		
		8745	+42	319	−18	48	533	13		
		8744	+46	323	+20	48	242	1		
		(13)		(277)	(+6)		4,482	103		
7	10 15	8768	−87	176	+13	87	194	1	G	Do.
		8767	−79	184	+10	79	242	3		
		8767	−69	194	+10	69	24	2		
		8766	−69	194	−31	74	291	1		
		8765	−62	201	−12	64	12	1		
		8763	−60	203	+19	60	97	2		
		8763	−55	208	+19	56	218	4		
		8759	−46	217	+7	46	12	3		
		8759	−39	224	+8	39	61	10		
		8762	−45	218	−21	53	121	15		
		8762	−39	224	−21	47	194	1		
		8757	−24	239	−10	28	48	12		
		8757	−16	247	−16	27	61	2		
		8756	−8	255	+11	10	145	12		
		8756	−1	262	+8	2	194	7		
		8764	−1	262	−18	24	388	23		
		8752	+3	266	−12	17	727	8		
		8752	+12	275	−10	20	485	35		
		8750	+13	276	−13	22	97	1		
		8749	+20	283	−10	26	97	1		
		8745	+43	306	−21	51	291	7		
		8745	+56	319	−18	61	461	8		
		8744	+60	323	+19	60	242	1		
		(15)		(263)	(+6)		4,702	160		
8	10 29	8768	−75	175	+13	75	194	1	F	Do.
		8770	−75	175	−28	80	194	2		
		8767	−70	180	+10	70	73	3		
		8767	−64	186	+9	64	242	1		
		8767	−58	192	+9	58	24	1		
		8767	−49	201	+9	49	48	3		
		8766	−56	194	−31	66	339	1		
		8763	−47	203	+19	48	73	4		
		8763	−41	209	+19	42	194	2		
		8765	−46	204	−12	48	12	1		
		8762	−31	219	−20	41	145	13		
		8762	−26	224	−20	37	170	1		
		8759	−25	225	+9	25	145	6		
		8757	−11	239	−11	20	12	3		
		8757	−2	248	−16	22	109	1		
		8756	+7	257	+10	8	351	6		
		8756	+14	264	+9	14	97	4		
		8764	+12	262	−19	28	533	12		
		8752	+17	267	−12	24	1,357	9		
		8750	+27	277	−13	32	73	1		
		8749	+32	282	−9	35	145	7		
		8745	+54	304	−21	61	48	4		
		8745	+70	320	−18	73	388	1		
		8744	+72	322	+19	72	242	1		
		(16)		(250)	(+6)		5,208	88		
9	11 21	8774	−85	151	+16	85	388	1	VG	Do.
		8770	−68	168	−27	72	48	1		
		8770	−61	175	−28	69	194	7		
		8768	−61	175	+13	61	145	5		
		8769	−59	177	+19	60	194	12		
		8769	−53	183	+18	54	339	11		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR AUGUST 1947—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	*h m*		°	°	°	°				
Aug. 9	11 21	8767	−50	186	+12	50	194	12	VG	U. S. Naval.
		8767	−46	190	+12	46	145	16		
		8767	−36	200	+10	36	97	12		
		8766	−41	195	−32	56	339	4		
		8765	−34	202	−12	38	12	1		
		8763	−32	204	+18	34	73	7		
		8763	−27	209	+17	29	218	5		
		8762	−20	216	−20	32	97	10		
		8762	−13	223	−20	29	218	14		
		8759	−11	225	+9	11	97	14		
		8757	+1	237	−11	17	12	1		
		8757	+11	247	−15	24	145	13		
		(*)	+4	240	−4	11	24	3		
		8756	+20	256	+10	21	48	5		
		8756	+27	263	+9	27	97	10		
		8764	+25	261	−19	35	315	27		
		8764	+31	267	−18	39	339	17		
		8752	+30	266	−12	34	339	6		
		8752	+35	271	−9	39	776	39		
		8750	+40	276	−13	44	97	1		
		8749	+45	281	−9	47	194	3		
		8744	+86	322	+19	86	194	2		
		(18)		(236)	(+6)		5,378	259		
10	18 43	8774	−70	149	+16	70	485	2	F	Mt. Wilson.
		8770	−48	171	−28	59	145	6		
		8768	−43	176	+12	43	145	2		
		8769	−42	177	+20	43	194	5		
		8769	−38	181	+17	39	291	4		
		8767	−39	180	+11	39	12	1		
		8767	−28	191	+12	29	776	42		
		8767	−17	202	+10	18	121	9		
		8773	−35	184	+26	40	12	1		
		8766	−26	193	−32	46	291	2		
		8763	−13	206	+17	18	85	5		
		8763	−9	210	+17	14	97	8		
		8762	−3	216	−20	26	85	17		
		8762	+3	222	−20	26	194	1		
		8759	+7	226	+9	8	170	17		
		8757	+28	247	−17	37	97	1		
		8764	+39	258	−19	45	242	21		
		8764	+49	268	−19	54	242	1		
		8756	+47	266	+9	47	24	1		
		8752	+48	267	−12	51	582	8		
		8752	+55	274	−9	57	291	12		
		8750	+57	276	−12	59	97	1		
		8749	+65	284	−9	67	206	4		
		8772	+67	286	−27	71	97	3		
		(17)		(219)	(+6)		4,981	174		
11	10 44	8774	−60	150	+16	60	485	2	G	U. S. Naval.
		8770	−38	172	−28	51	145	6		
		8769	−32	178	+20	34	109	4		
		8769	−29	181	+17	31	339	5		
		8768	−32	178	+12	32	97	1		
		8773	−27	183	+25	33	48	5		
		8767	−18	192	+12	20	1,018	53		
		8766	−17	193	−32	41	291	1		
		8765	−7	203	−12	20	12	2		
		8763	−6	204	+18	14	24	9		
		8763	+2	212	+17	11	145	8		
		8762	+7	217	−21	29	48	6		
		8762	+12	222	−21	30	194	4		
		8759	+17	227	+8	17	267	7		
		8757	+38	248	−17	44	121	4		
		8764	+48	258	−19	54	145	4		
		8764	+58	268	−20	63	242	5		
		8756	+54	264	+9	54	12	1		
		8752	+57	267	−13	60	412	5		
		8752	+65	275	−9	67	339	4		
		8750	+66	276	−15	70	73	1		
		8749	+72	282	−10	74	242	7		
		(17)		(210)	(+6)		4,808	144		
12	10 49	(*)	−56	141	+25	58	6	1	G	Do.
		8774	−46	151	+16	48	485	3		
		8770	−24	173	−28	42	121	2		
		8769	−23	174	+20	27	97	5		
		8769	−17	180	+19	22	24	10		
		8769	−14	183	+17	18	339	1		
		8768	−20	177	+12	22	97	1		
		8767	−19	178	+7	19	24	7		
		8767	−5	192	+10	5	873	47		
		8773	−13	184	+25	23	61	9		
		8766	−3	194	−32	38	291	1		
		8763	+15	212	+17	18	97	8		
		8762	+19	216	−20	32	12	1		
		8762	+28	225	−20	38	194	4		
		8759	+31	228	+8	31	436	2		
		8775	+43	240	−12	46	73	3		
		8757	+51	248	−17	58	61	2		
		8764	+61	258	−19	66	97	3		
		8764	+66	263	−19	70	12	1		
		8764	+72	269	−19	78	242	1		
		8752	+69	266	−13	71	388	1		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR AUGUST 1947—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	*h m*		°	°	°	°				
Aug. 12	10 49	8752	+79	276	−9	81	339	1	G	U. S. Naval.
		8750	+78	275	−13	80	73	2		
		(16)		(197)	(+6)		4,442	116		
13	10 30	8782	−72	112	−20	76	24	2	G	Do.
		8779	−70	114	+18	71	97	1		
		8778	−36	148	+23	39	24	4		
		8774	−35	149	+15	37	48	9		
		8774	−33	151	+15	35	533	1		
		8776	−27	157	+7	27	48	7		
		8777	−26	158	+28	32	73	9		
		(*)	−9	175	+2	11	12	6		
		8770	−9	175	−29	37	97	2		
		8768	−7	177	+12	9	97	3		
		8769	−7	177	+19	14	73	13		
		8769	−1	183	+17	10	194	1		
		(*)	−5	179	+7	5	12	7		
		8773	−2	182	+25	19	48	6		
		8767	+8	192	+11	10	1,164	49		
		8767	+22	206	+11	23	12	1		
		8766	+10	194	−32	41	267	1		
		8763	+28	212	+18	31	97	8		
		8781	+29	213	+9	29	12	2		
		8762	+31	215	−20	41	6	1		
		8762	+41	225	−20	49	206	2		
		8780	+32	216	+17	33	12	5		
		8759	+44	228	+9	45	582	2		
		8775	+55	239	−9	57	36	3		
		8757	+65	249	−16	68	12	1		
		8764	+75	259	−19	78	121	3		
		8752	+82	266	−12	83	291	2		
		(23)		(184)	(+7)		4,198	151		
14	10 37	8785	−87	84	−14	88	97	1	G	Do.
		8784	−80	91	−22	82	24	3		
		8782	−59	112	−20	63	24	3		
		8779	−58	113	+18	58	242	4		
		8783	−31	140	−22	42	12	2		
		8774	−22	149	+13	23	48	5		
		8774	−20	151	+15	22	533	1		
		8776	−13	158	+9	14	24	4		
		8777	−11	160	+28	25	121	10		
		8770	+2	173	−29	37	97	2		
		8768	+7	178	+11	7	73	3		
		8769	+7	178	+19	14	61	10		
		8769	+11	182	+18	16	194	1		
		8773	+10	181	+25	21	12	4		
		8767	+20	191	+11	21	1,357	52		
		8767	+35	206	+10	35	12	1		
		8766	+22	193	−32	43	218	1		
		(*)	+29	200	−14	35	12	3		
		8763	+41	212	+17	42	24	5		
		8781	+43	214	+7	43	48	6		
		8780	+45	216	+13	45	48	13		
		8762	+53	224	−21	58	194	1		
		8759	+57	228	+9	57	582	2		
		8775	+70	241	−13	72	97	3		
		8757	+78	249	−18	80	24	1		
		(22)		(171)	(+7)		4,178	141		
15	10 39	8785	−72	86	−15	74	194	1	G	Do.
		8784	−67	91	−22	71	194	6		
		8779	−47	111	+18	47	97	8		
		8779	−42	116	+19	43	218	1		
		8782	−46	112	−19	52	24	5		
		8783	−20	138	−22	34	97	5		
		8774	−8	150	+13	11	73	8		
		8774	−6	152	+15	10	533	1		
		8776	+2	160	+9	3	12	3		
		8777	+2	160	+29	22	73	4		
		8770	+12	170	−29	38	121	1		
		8769	+18	176	+20	22	36	3		
		8769	+22	180	+17	23	242	2		
		8768	+20	178	+11	21	61	1		
		8773	+27	185	+27	33	12	3		
		8767	+33	191	+11	33	1,357	45		
		8766	+34	192	−32	51	206	1		
		8763	+53	211	+17	53	12	2		
		8781	+60	218	+7	60	12	1		
		8780	+60	218	+12	60	24	4		
		8762	+66	224	−21	70	194	1		
		8759	+70	228	+9	70	485	2		
		(19)		(158)	(+7)		4,277	108		
16	10 35	8785	−89	85	−15	62	194	1	F	Do.
		8784	−87	87	−22	62	97	4		
		8784	−80	94	−22	57	194	4		
		8779	−35	109	+17	39	73	4		
		8779	−29	115	+18	30	315	5		
		8782	−32	112	−19	40	24	3		
		8783	−10	134	−20	28	97	5		
		8783	−4	140	−20	28	48	3		
		8774	+7	151	+14	11	533	1		
		8774	+8	152	+12	10	121	8		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR AUGUST 1947—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	h m		°	°	°	°				
Aug. 16	10 35	8776	+15	159	+9	16	12	3	F	U. S. Naval.
		8777	+17	161	+29	27	24	2		
		8770	+27	171	−29	43	145	2		
		8768	+34	178	+11	34	24	1		
		8769	+37	181	+17	38	242	2		
		8767	+47	191	+11	47	1,406	42		
		8766	+47	191	−32	60	242	1		
		8763	+67	211	+17	67	24	1		
		8762	+80	224	−21	82	97	1		
		8759	+82	226	+8	82	485	2		
		(16)		(144)	(+7)		4,397	95		
17	11 5	8786	−63	68	−16	67	24	2	F	Mt. Wilson.
		8785	−45	86	−15	50	145	1		
		8784	−43	88	−22	51	170	5		
		8784	−36	95	−22	45	242	8		
		8779	−19	112	+19	22	109	13		
		8779	−15	116	+18	19	242	1		
		8782	−18	113	−21	33	24	4		
		8783	+8	139	−20	28	97	13		
		8774	+20	151	+15	22	533	1		
		8774	+22	153	+15	23	97	4		
		8777	+25	156	+31	34	12	1		
		8776	+29	160	+9	29	12	2		
		8770	+42	173	−29	53	121	1		
		8768	+48	179	+12	48	12	1		
		8769	+51	182	+17	51	218	1		
		8767	+60	191	+12	60	436	14		
		8767	+75	206	+9	75	582	5		
		8766	+62	193	−31	69	218	1		
		(14)		(131)	(+7)		3,294	78		
18	9 30	8786	−51	67	−16	56	12	1	VG	Do.
		8785	−31	87	−14	37	145	1		
		8784	−30	88	−22	41	145	10		
		8784	−23	95	−22	37	218	3		
		8782	−10	108	−21	30	24	6		
		8782	−5	113	−20	28	48	8		
		8779	−7	111	+19	14	73	16		
		8779	−2	116	+18	12	218	1		
		8783	+21	139	−20	34	73	10		
		8774	+23	141	+17	25	48	12		
		8774	+32	150	+16	33	97	19		
		8774	+33	151	+15	34	485	1		
		8770	+56	174	−28	64	73	2		
		8769	+63	181	+18	63	194	4		
		8767	+73	191	+12	73	436	9		
		8767	+88	206	+9	88	582	3		
		8766	+75	193	−31	80	218	1		
		(11)		(118)	(+7)		3,089	109		
19	12 4	8788	−50	54	−20	57	170	5	F	U. S. Naval.
		8786	−37	67	−16	43	12	1		
		8787	−28	76	−12	34	12	3		
		8785	−17	87	−15	28	145	1		
		8784	−16	88	−22	32	97	8		
		8784	−8	96	−21	29	218	4		
		8779	+6	110	+19	13	36	7		
		8779	+11	115	+19	17	194	1		
		8783	+34	138	−22	44	48	6		
		8783	+39	143	−21	47	24	2		
		8774	+48	152	+14	48	485	1		
		8770	+68	172	−29	72	24	1		
		8769	+77	181	+18	77	121	1		
		(10)		(104)	(+7)		1,586	41		
20	10 30	8788	−39	53	−21	47	48	2	G	Do.
		8788	−36	56	−19	44	121	7		
		8787	−14	78	−12	23	48	4		
		8785	−6	86	−15	23	109	1		
		8784	−4	88	−24	32	73	10		
		8784	+3	95	−24	32	267	5		
		8782	+21	113	−21	35	12	6		
		8779	+22	114	+19	25	218	7		
		8783	+47	139	−22	54	109	12		
		8774	+60	152	+13	60	436	1		
		8774	+60	152	+12	60	12	4		
		(8)		(92)	(+7)		1,453	59		
21	9 58	8790	−78	1	+18	78	48	4	F	Mt. Wilson.
		8789	−77	2	−20	79	194	1		
		8788	−22	57	−19	34	48	1		
		8786	−10	69	−14	23	24	2		
		8787	0	79	−12	19	24	6		
		8785	+9	88	−15	24	97	1		
		8784	+10	89	−24	33	48	3		
		8784	+18	97	−24	36	145	4		
		8779	+36	115	+19	37	145	2		
		8783	+59	138	−20	63	73	2		
		8774	+74	153	+14	74	436	1		
		(10)		(79)	(+7)		1,282	27		

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR AUGUST 1947—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	h m		°	°	°	°				
Aug. 22	14 30	8790	−53	0	+16	63	48	3	G	U. S. Naval.
		8789	−53	0	−22	69	12	1		
		8789	−60	3	−21	65	170	1		
		8788	−6	57	−17	27	24	2		
		8788	−4	59	−15	23	36	2		
		8787	+13	76	−12	22	12	1		
		8785	+24	87	−15	32	97	1		
		8784	+26	89	−24	40	24	5		
		8784	+32	95	−24	45	73	6		
		8779	+51	114	+19	51	121	5		
		8774	+84	147	+13	84	388	1		
		(8)		(63)	(+7)		1,005	28		
23	10 14	8790	−57	355	+17	57	12	4	VG	Do.
		8790	−51	1	+16	51	48	4		
		8789	−51	1	−22	59	12	6		
		8789	−48	4	−21	54	145	1		
		8791	−40	12	−17	47	12	1		
		8785	+35	87	−15	41	73	1		
		8784	+42	94	−24	51	24	4		
		8779	+63	115	+19	63	109	3		
		(6)		(52)	(+7)		435	24		
24	14 10	8792	−85	312	+20	85	388	6	G	Do.
		8792	−79	318	+19	79	97	1		
		8790	−42	355	+17	43	12	2		
		8790	−35	2	+17	37	24	2		
		8789	−36	1	−22	46	12	2		
		8789	−30	7	−21	41	121	1		
		8791	−27	10	−17	37	48	7		
		8791	−23	14	−17	33	48	1		
		8794	−10	27	+31	26	97	11		
		8793	+16	53	+28	27	6	1		
		8785	+50	87	−15	54	73	1		
		8784	+58	95	−24	64	12	1		
		8779	+79	116	+19	79	194	1		
		(9)		(37)	(+7)		1,132	37		
25	10 26	8792	−78	307	+20	78	315	3	G	Do.
		8792	−72	313	+21	73	291	9		
		8792	−67	318	+19	67	73	1		
		8790	−30	355	+17	32	6	3		
		8790	−23	2	+17	26	12	1		
		8789	−19	6	−21	33	100	1		
		8791	−15	10	−17	29	24	5		
		8791	−11	14	−17	27	97	4		
		8794	+2	27	+31	24	194	15		
		8793	+29	54	+29	35	12	4		
		8785	+62	87	−15	66	73	1		
		(7)		(25)	(+7)		1,206	47		
26	10 34	8796	−83	289	+16	83	194	2	G	Do.
		8792	−65	307	+20	65	291	5		
		8792	−57	315	+21	58	388	22		
		8795	−38	334	+11	38	12	3		
		8790	−18	354	+17	21	48	4		
		8790	−12	0	+17	16	24	1		
		8789	−5	7	−21	29	97	1		
		8791	−2	10	−17	25	242	6		
		8794	+10	22	+31	26	24	2		
		8794	+16	28	+30	27	194	1		
		(*)	+35	47	−16	42	12	3		
		8785	+76	88	−15	79	48	1		
		(9)		(12)	(+7)		1,574	51		
27	9 11	8799	−81	279	+16	81	194	1	VG	Mt. Wilson.
		8798	−79	281	−14	81	339	4		
		8797	−78	282	−9	79	679	1		
		(*)	−75	285	+11	75	12	3		
		8796	−70	290	+17	77	242	6		
		8792	−54	306	+22	55	121	1		
		8792	−46	314	+23	47	533	60		
		9792	−39	321	+21	41	36	1		
		8792	−35	325	+21	37	24	7		
		8795	−27	333	+12	28	12	1		
		8795	−25	335	+11	26	6	2		
		8790	−4	356	+17	12	24	2		
		8789	+9	9	−20	28	121	2		
		8791	+11	11	−17	27	73	22		
		8791	+13	13	−18	28	121	4		
		8794	+23	23	+31	33	16	10		
		8794	+30	30	+30	37	145	1		
		(11)		(0)	(+7)		2,698	128		
28	12 44	8803	−80	265	−12	80	145	2	VG	U. S. Naval.
		8802	−76	269	−16	79	206	1		
		8801	−75	270	+17	76	12	3		
		8799	−68	277	+14	68	194	1		
		8798	−68	277	−16	70	194	1		
		8795	−63	282	−16	65	267	2		
		8797	−62	283	−10	64	679	2		
		8796	−59	286	+16	59	48	4		

See footnotes at end of table.

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS FOR AUGUST 1947—Continued

Date	Eastern standard time	Mount Wilson group No.	Heliographic: Difference in longitude	Heliographic: Longitude	Heliographic: Latitude	Heliographic: Distance from center of disk	Area of spot or group	Spot count	Plate quality	Observatory
1947	h m		°	°	°	°				
Aug. 28	12 44	8792	−39	306	+20	40	109	1	VG	U. S. Naval.
		8792	−30	315	+21	33	436	45		
		8800	−18	327	−22	34	24	7		
		8795	−10	335	+11	11	73	7		
		8790	+11	356	+17	15	12	4		
		8789	+18	3	−22	33	6	3		
		8789	+25	10	−21	37	97	4		
		8791	+29	14	−19	39	194	11		
		8794	+41	26	+31	46	121	1		
		(14)		(345)	(+7)		2,817	99		
29	10 20	8806	−85	248	−15	85	145	1	G	Do.
		8805	−79	254	+18	79	12	2		
		8803	−67	266	−12	69	194	5		
		8802	−62	271	−16	66	194	1		
		8801	−62	271	+17	62	121	10		
		8799	−55	278	+15	55	194	1		
		8798	−54	279	−16	59	194	2		
		8798	−50	283	−16	54	206	2		
		8797	−50	283	−10	52	582	7		
		8796	−47	286	+16	47	12	4		
		8804	−45	288	+11	45	12	5		
		8792	−27	306	+20	30	97	1		
		8792	−19	314	+20	22	291	36		
		8795	+3	336	+11	6	97	10		
		8789	+37	10	−21	46	97	7		
		8791	+41	14	−18	48	121	12		
		8794	+53	26	+31	56	97	3		
		(15)		(333)	(+7)		2,666	109		
30	10 36	8807	−88	231	+10	88	242	1	G	Do.
		8806	−71	248	−15	73	194	1		
		8805	−63	256	+19	63	12	2		
		8803	−54	265	−11	56	218	9		
		8802	−49	270	−16	53	194	3		
		8801	−49	270	+17	49	145	7		
		8799	−42	277	+15	42	194	1		
		8798	−41	278	−16	46	145	2		
		8798	−36	283	−16	43	206	1		
		8797	−36	283	−10	40	436	3		
		8797	−35	284	−8	38	12	1		
		8804	−31	288	+10	31	48	1		
		8792	−13	306	+20	18	61	1		
		8792	−5	314	+20	14	291	20		
		8795	+15	334	+9	16	145	8		
		8795	+20	339	+8	20	97	2		
		8789	+50	9	−21	57	194	10		
		8791	+54	13	−18	59	145	5		
		8794	+66	25	+31	68	73	1		
		(15)		(319)	(+7)		3,052	80		
31	10 56	8807	−74	232	+10	74	291	3	F	Do.
		8806	−57	249	−15	61	194	1		
		8803	+40	266	−11	43	194	7		
		8801	−35	271	+17	37	218	6		
		8802	+34	272	−16	40	194	1		
		8799	−29	277	+15	31	206	1		
		8798	−27	279	−16	36	97	1		
		8798	−22	284	−16	31	194	1		
		8797	−22	284	−10	27	388	7		
		8804	−18	288	+10	18	24	2		
		8792	+1	307	+20	13	48	1		
		8792	+9	315	+21	17	291	16		
		8795	+31	337	+10	31	339	12		
		8789	+63	9	−21	68	194	5		
		8791	+68	14	−19	70	242	2		
		8794	+79	25	+31	79	73	1		
		(14)		(306)	(+7)		3,187	67		

Mean daily area for 31 days=3,240
Mean 10 g+s for 31 days =231.4

*Not numbered.
VG=very good; G=good; F=fair; P=poor.

PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR AUGUST 1947

August 1947	Relative numbers	August 1947	Relative numbers	August 1947	Relative numbers
1	138	11	320	21	103
2	155	12	298	22	90
3	210	13	295	23	80
4	220	14	286	24	82
5	192	15	271	25	104
6	204	16	262	26	92
7	257	17	215	27	124
8	251	18	186	28	151
9	299	19	150	29	181
10	313	20	126	30	208
				31	217

Mean, 31 days=196. 1

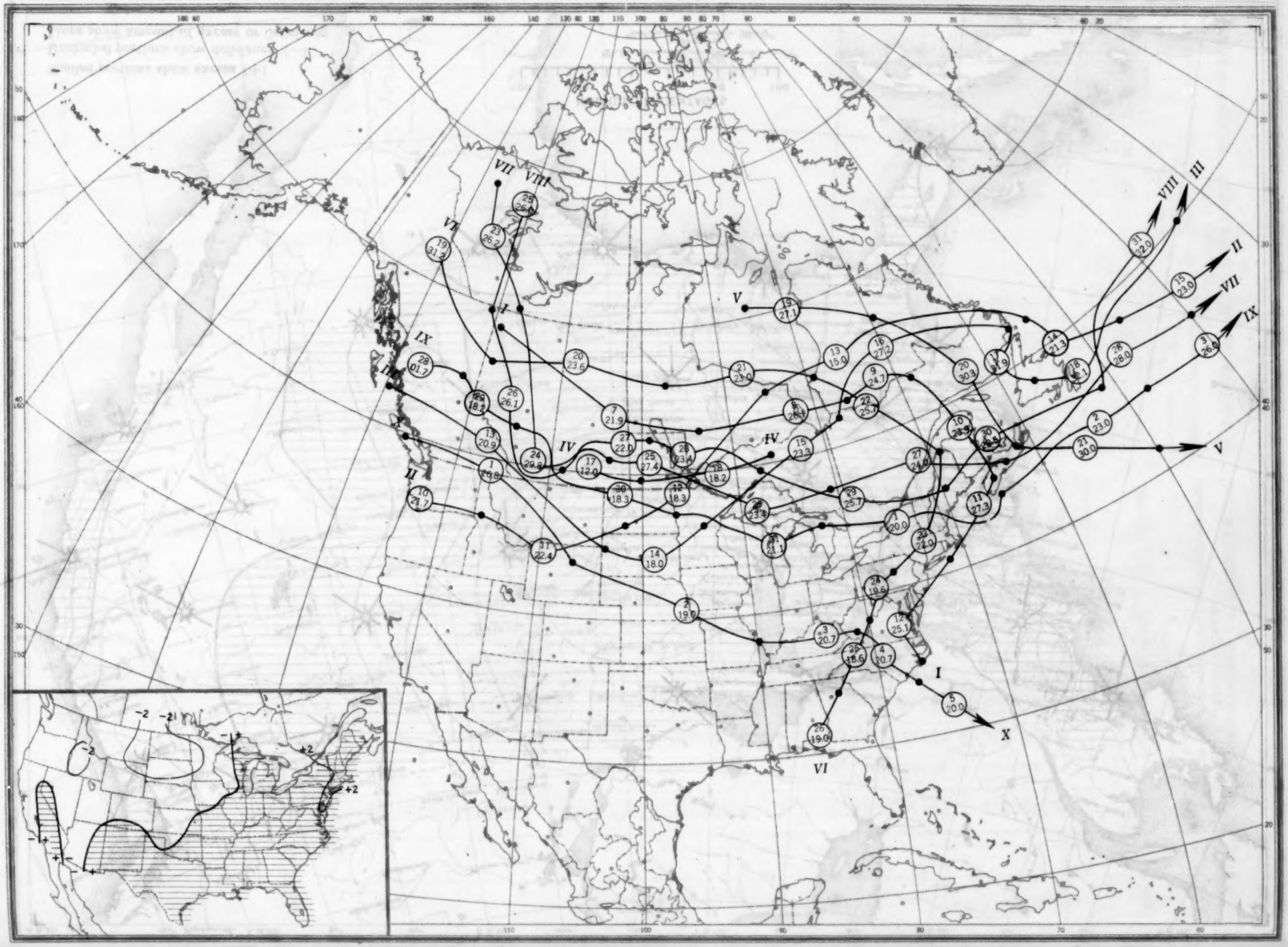
U. S. GOVERNMENT PRINTING OFFICE: 1947

Chart I.—Departure (°F.) of the Mean Temperature from the Normal and Wind Roses for Selected Stations, August 1947

Chart I. · Departure (°F.) of the Mean Temperature from the Normal, and Wind Roses for Selected Stations, August 1947

HOURLY PERCENTAGES
100 50 0 50 100
Shaded portions show excess (+)
Unshaded portions show deficiency (—)
Lines show amount of excess or deficiency

Chart II. Tracks of Centers of Anticyclones, August, 1947. (Inset) August Departure of Monthly Mean Pressure from Normal

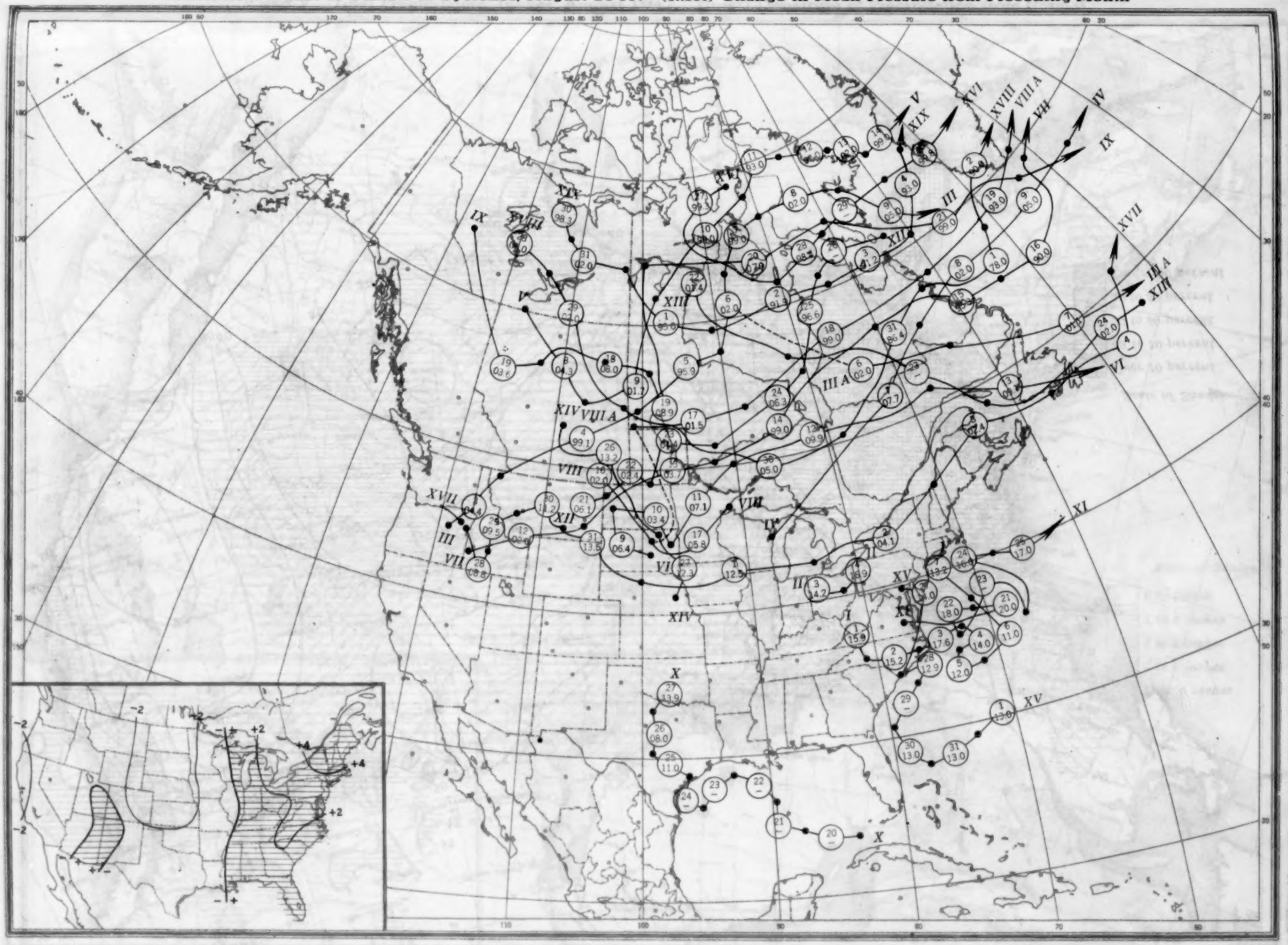


Circle indicates position of anticyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 7:30 p. m. (75th meridian time)

Chart III. Tracks of Centers of Cyclones, August 1947. (Inset) Change in Mean Pressure from Preceding Month

Circle indicates position of anticyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 7:30 p. m. (75th meridian time)

Chart III. Tracks of Centers of Cyclones, August 1947. (Inset) Change in Mean Pressure from Preceding Month



Circle indicates position of cyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of cyclone at 7:30 p. m. (75th meridian time)

Chart IV. Percentage of Clear Sky Between Sunrise and Sunset, August 1947

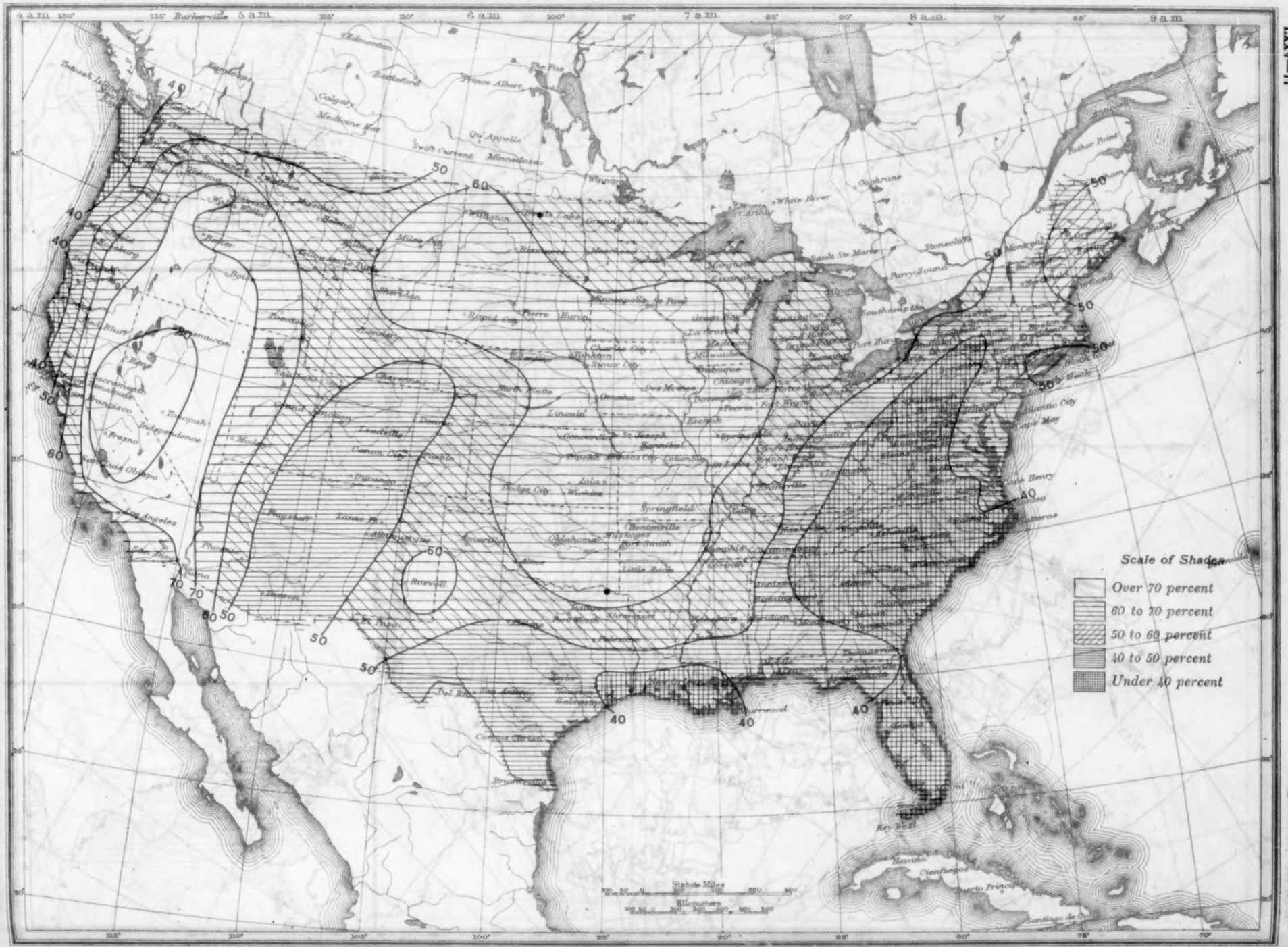


Chart V. Total Precipitation, Inches, August 1947 (Inset) Departure of Precipitation [illegible]

Chart V. Total Precipitation, Inches, August 1947. (Inset) Departure of Precipitation from Normal

Chart VI. Isobars (mb.), at Sea Level and Isotherms (°F.) at Surface; Prevailing Winds, August 1947

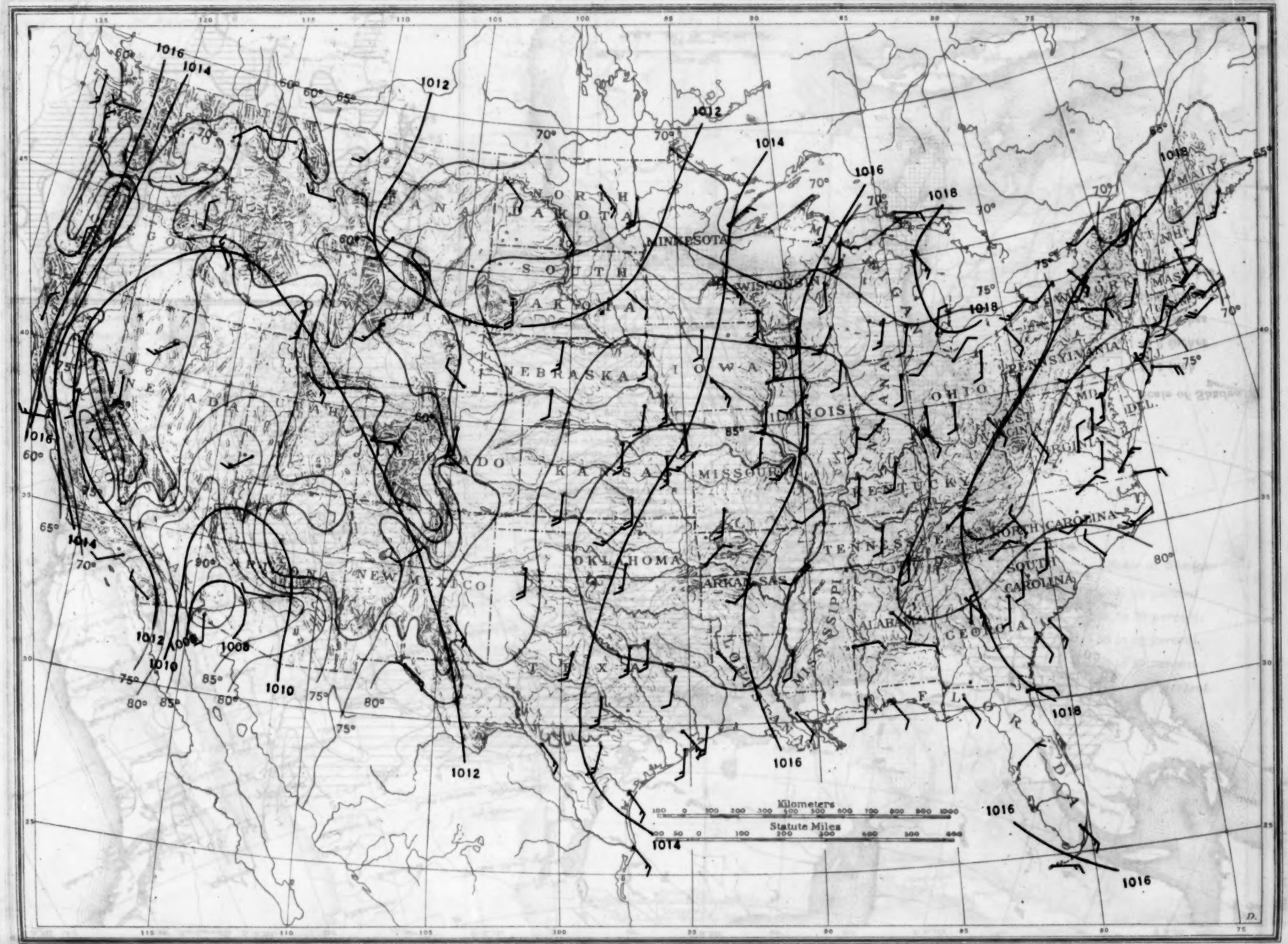
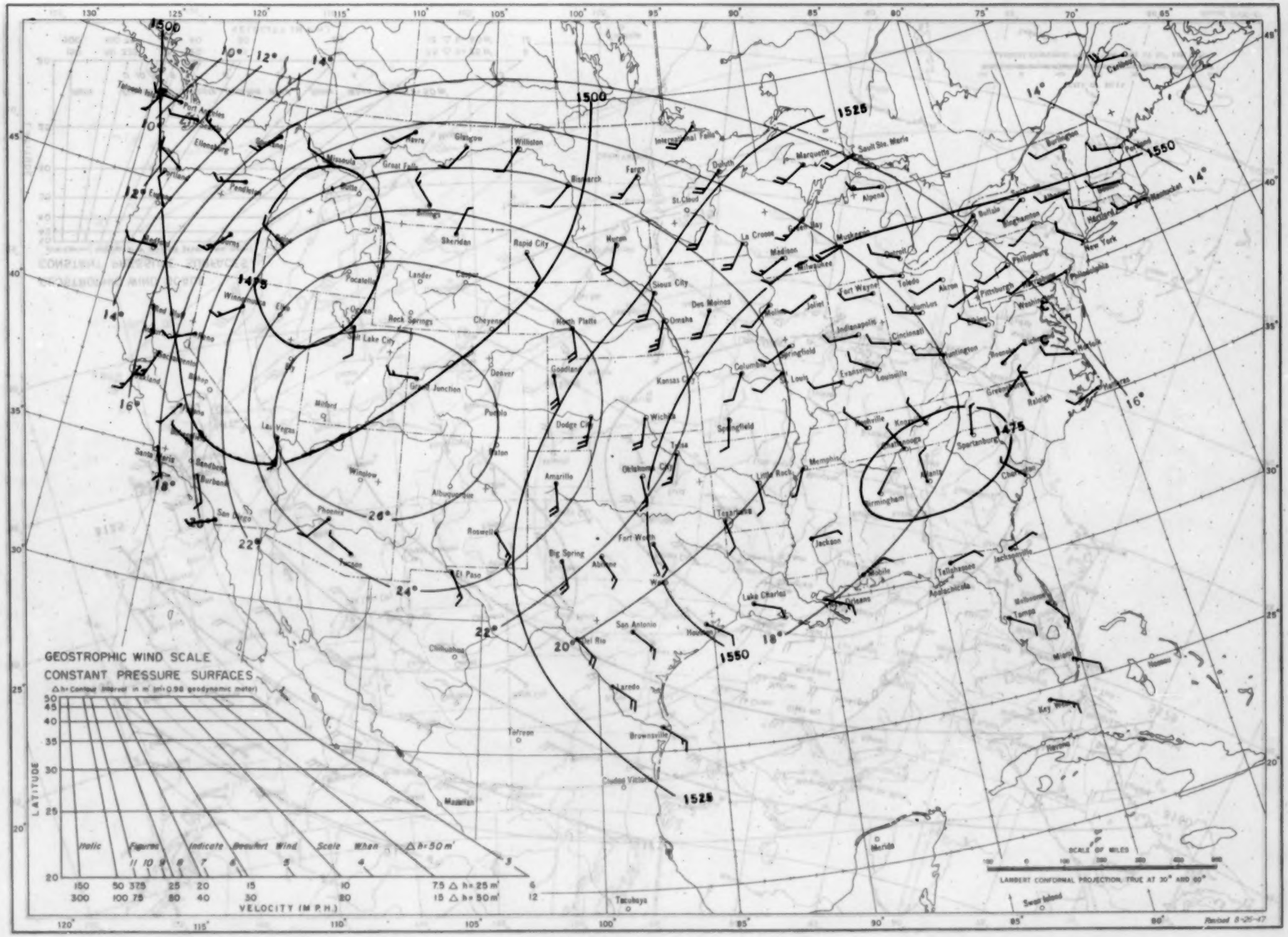
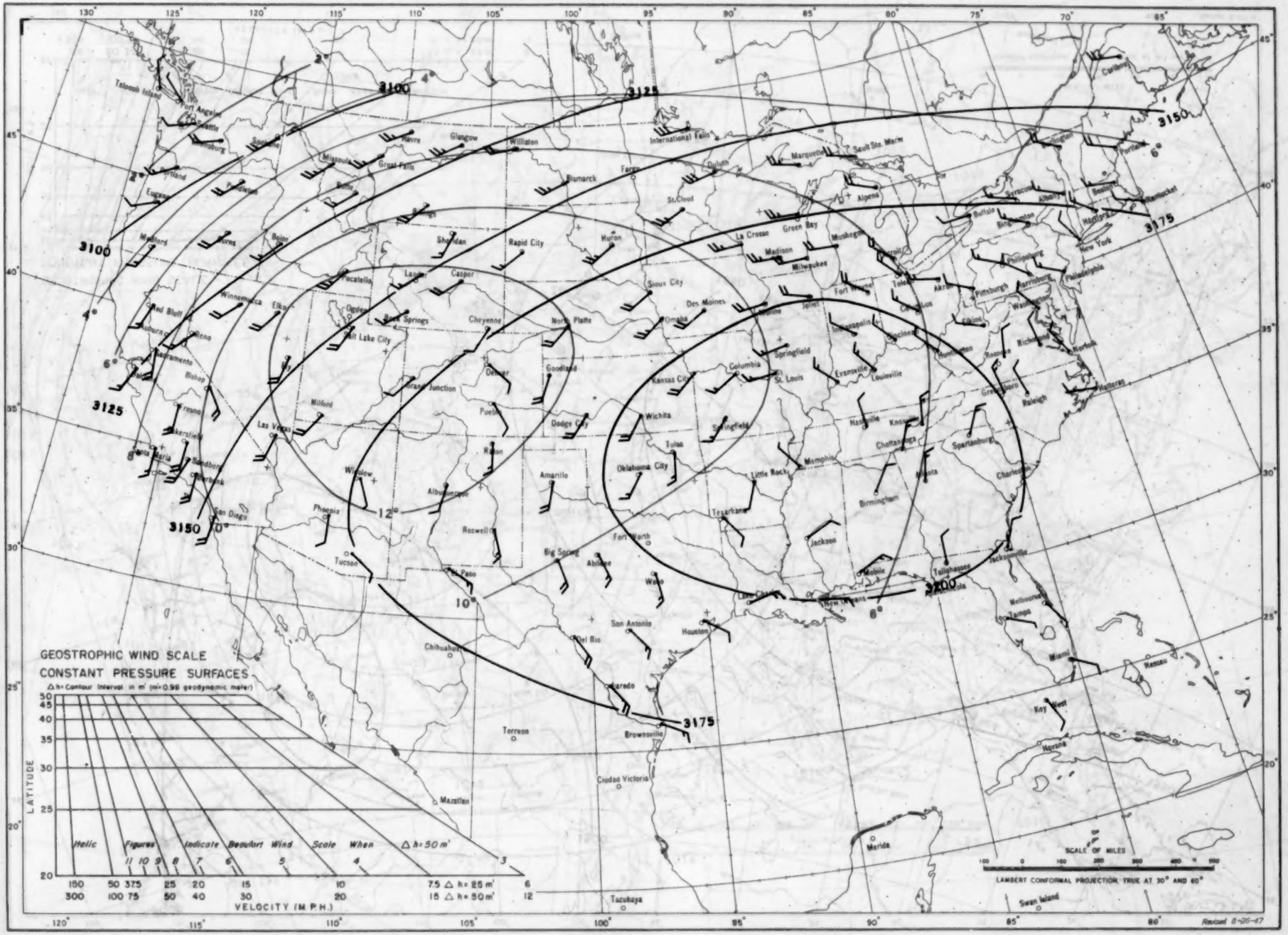


Chart VIII, August 1947. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 850–millibar Pressure Surface, and Resultant Winds at 1,500 Meters (m.s.l.)


GEOSTROPHIC WIND SCALE
CONSTANT PRESSURE SURFACES
Δh= Contour interval in m (m=0.98 geodynamic meter)
LATITUDE
VELOCITY (M.P.H.)
Italic Figures indicate Beaufort Wind Scale When Δh=50 m'
LAMBERT CONFORMAL PROJECTION, TRUE AT 30° AND 60°
SCALE OF MILES
Revised 8-26-47

Contour lines and isotherms based on radiosonde observations at 0300 G.C.T., and winds based on pilot balloon observations at 2200 G.C.T.

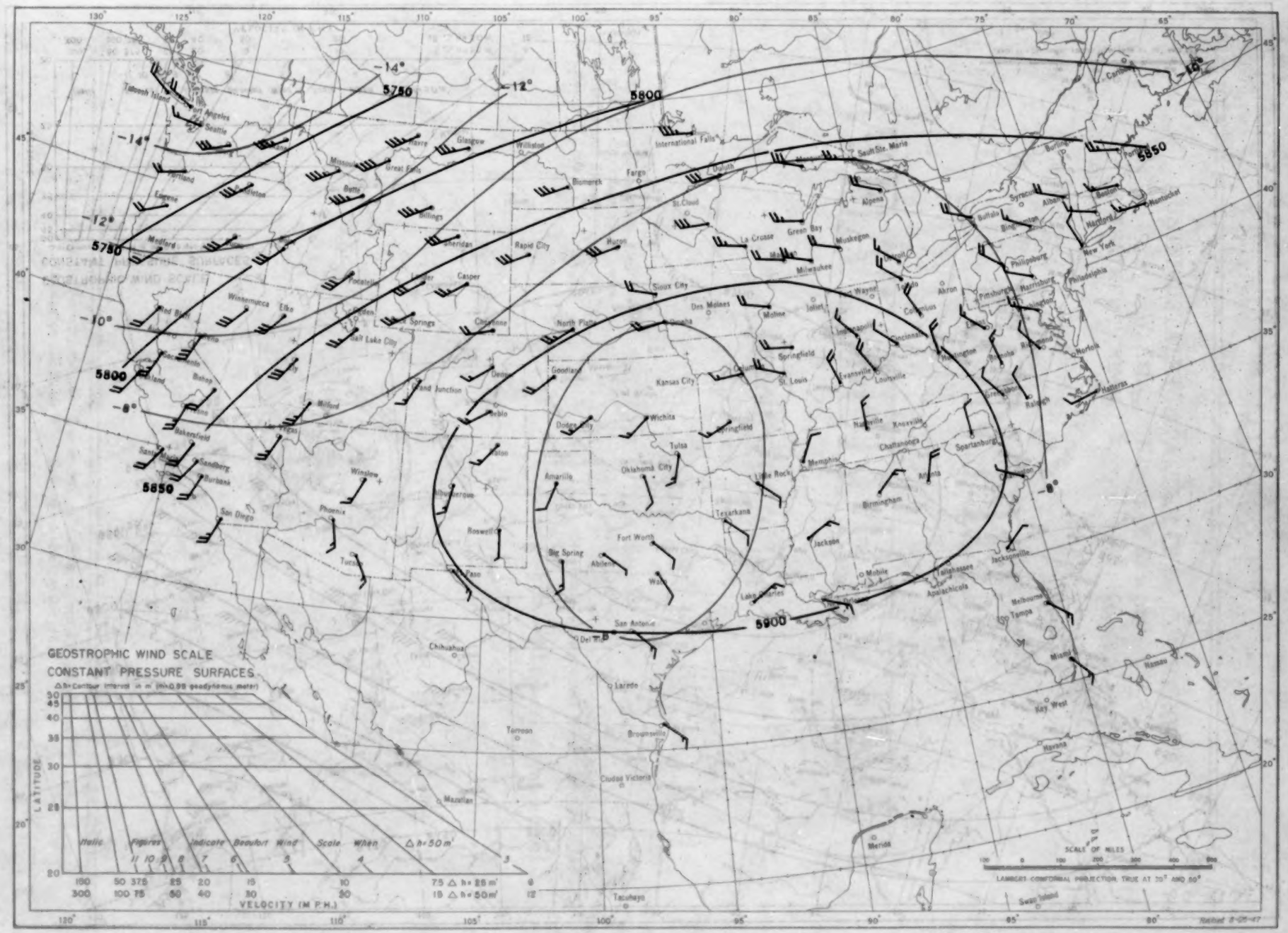
Chart IX, August 1947. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 700–millibar Pressure Surface, and Resultant Winds at 3,000 Meters (m.s.l.)



Contour lines and isotherms based on radiosonde observations at 0300 G.C.T., and winds based on pilot balloon observations at 2200 G.C.T.

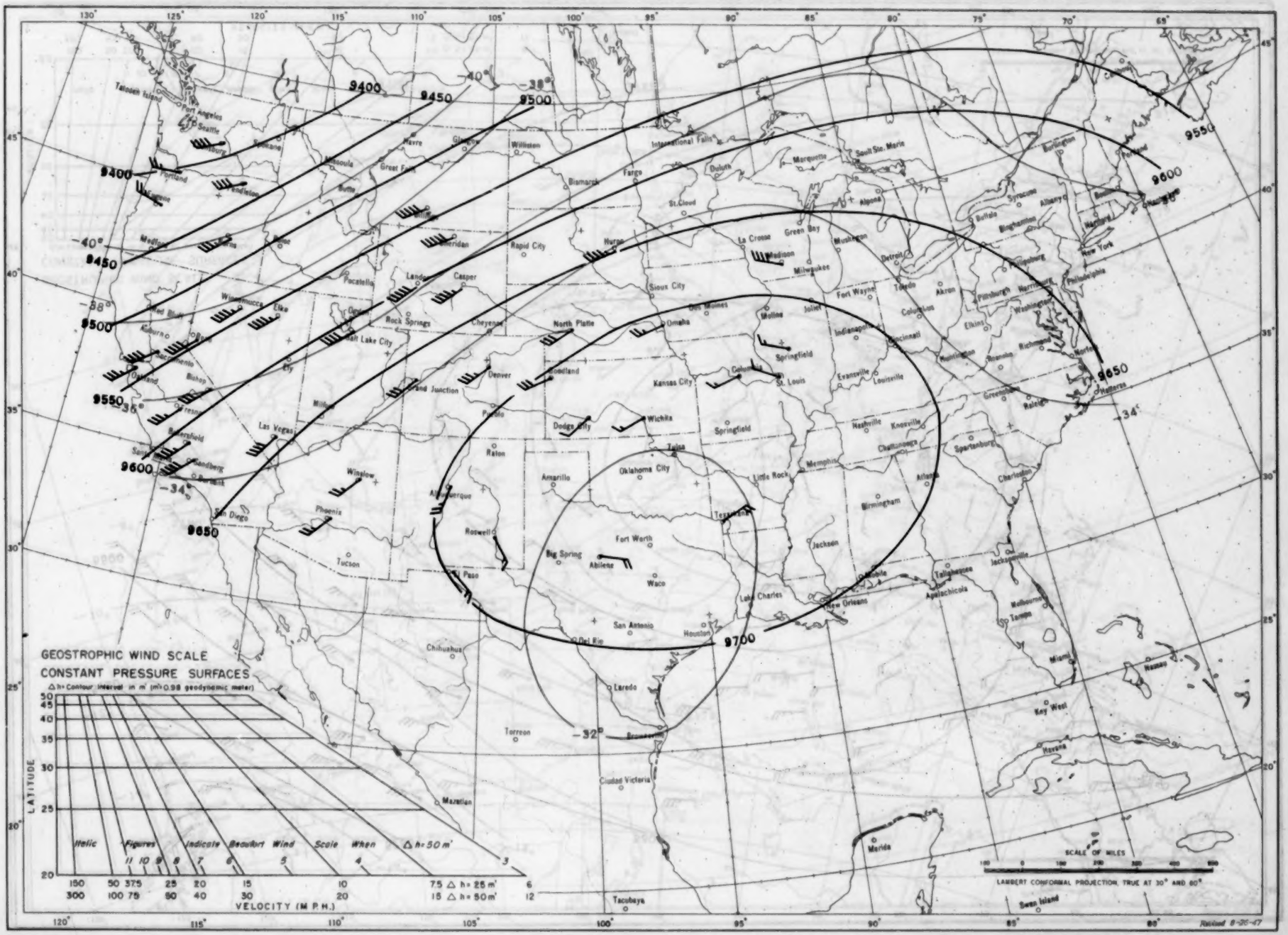
Contour lines and isotherms based on radiosonde observations at 0300 G.C.T., and winds based on pilot balloon observations at 2200 G.C.T.

Chart X, August 1947. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 500-millibar Pressure Surface, and Resultant Winds at 5,000 Meters (m.s.l.)



Contour lines and isotherms based on radiosonde observations at 0300 G.C.T., and winds based on pilot balloon observations at 2200 G.C.T.

Chart XI, August 1947. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 300-millibar Pressure Surface, and Resultant Winds at 10,000 Meters (m.s.l.)



Contour lines and isotherms based on radiosonde observations at 0300 G.C.T., and winds based on pilot balloon observations at 2200 G.C.T.